SEQUENCE LISTING

<110> The Wistar Institute
Ramin Shiekhattar

<120> METHODS FOR REGULATING BRCA1-BRCA2-CONTAINING COMPLEX ACTIVITY

<130> WSTR-0014B

<150> US 60/401,433
<151> 2002-08-05

<150> US 60/449,950
<151> 2003-02-24

<160> 26

<170> PatentIn version 3.1

<210> 1
<211> 3418
<212> PRT
<213> Homo sapiens

<400> 1

Met Pro Ile Gly Ser Lys Glu Arg Pro Thr Phe Phe Glu Ile Phe Lys
1 5 10 15

Thr Arg Cys Asn Lys Ala Asp Leu Gly Pro Ile Ser Leu Asn Trp Phe
20 25 30

Glu Glu Leu Ser Ser Glu Ala Pro Pro Tyr Asn Ser Glu Pro Ala Glu
35 40 45

Glu Ser Glu His Lys Asn Asn Asn Tyr Glu Pro Asn Leu Phe Lys Thr
50 55 60

Pro Gln Arg Lys Pro Ser Tyr Asn Gln Leu Ala Ser Thr Pro Ile Ile
65 70 75 80

Phe Lys Glu Gln Gly Leu Thr Leu Pro Leu Tyr Gln Ser Pro Val Lys
85 90 95

Glu Leu Asp Lys Phe Lys Leu Asp Leu Gly Arg Asn Val Pro Asn Ser
100 105 110

Arg His Lys Ser Leu Arg Thr Val Lys Thr Lys Met Asp Gln Ala Asp
115 120 125

Asp Val Ser Cys Pro Leu Leu Asn Ser Cys Leu Ser Glu Ser Pro Val

130 135 140

Val Leu Gln Cys Thr His Val Thr Pro Gln Arg Asp Lys Ser Val Val
145 150 155 160

Cys Gly Ser Leu Phe His Thr Pro Lys Phe Val Lys Gly Arg Gln Thr
165 170 175

Pro Lys His Ile Ser Glu Ser Leu Gly Ala Glu Val Asp Pro Asp Met
180 185 190

Ser Trp Ser Ser Ser Leu Ala Thr Pro Pro Thr Leu Ser Ser Thr Val
195 200 205

Leu Ile Val Arg Asn Glu Glu Ala Ser Glu Thr Val Phe Pro His Asp
210 215 220

Thr Thr Ala Asn Val Lys Ser Tyr Phe Ser Asn His Asp Glu Ser Leu
225 230 235 240

Lys Lys Asn Asp Arg Phe Ile Ala Ser Val Thr Asp Ser Glu Asn Thr
245 250 255

Asn Gln Arg Glu Ala Ala Ser His Gly Phe Gly Lys Thr Ser Gly Asn
260 265 270

Ser Phe Lys Val Asn Ser Cys Lys Asp His Ile Gly Lys Ser Met Pro
275 280 285

Asn Val Leu Glu Asp Glu Val Tyr Glu Thr Val Val Asp Thr Ser Glu
290 295 300

Glu Asp Ser Phe Ser Leu Cys Phe Ser Lys Cys Arg Thr Lys Asn Leu
305 310 315 320

Gln Lys Val Arg Thr Ser Lys Thr Arg Lys Lys Ile Phe His Glu Ala
325 330 335

Asn Ala Asp Glu Cys Glu Lys Ser Lys Asn Gln Val Lys Glu Lys Tyr
340 345 350

Ser Phe Val Ser Glu Val Glu Pro Asn Asp Thr Asp Pro Leu Asp Ser
355 360 365

```
Asn Val Ala His Gln Lys Pro Phe Glu Ser Gly Ser Asp Lys Ile Ser
    370                 375                 380

Lys Glu Val Val Pro Ser Leu Ala Cys Glu Trp Ser Gln Leu Thr Leu
385                 390                 395                 400

Ser Gly Leu Asn Gly Ala Gln Met Glu Lys Ile Pro Leu Leu His Ile
                405                 410                 415

Ser Ser Cys Asp Gln Asn Ile Ser Glu Lys Asp Leu Leu Asp Thr Glu
            420                 425                 430

Asn Lys Arg Lys Lys Asp Phe Leu Thr Ser Glu Asn Ser Leu Pro Arg
        435                 440                 445

Ile Ser Ser Leu Pro Lys Ser Glu Lys Pro Leu Asn Glu Glu Thr Val
    450                 455                 460

Val Asn Lys Arg Asp Glu Glu Gln His Leu Glu Ser His Thr Asp Cys
465                 470                 475                 480

Ile Leu Ala Val Lys Gln Ala Ile Ser Gly Thr Ser Pro Val Ala Ser
                485                 490                 495

Ser Phe Gln Gly Ile Lys Lys Ser Ile Phe Arg Ile Arg Glu Ser Pro
            500                 505                 510

Lys Glu Thr Phe Asn Ala Ser Phe Ser Gly His Met Thr Asp Pro Asn
        515                 520                 525

Phe Lys Lys Glu Thr Glu Ala Ser Glu Ser Gly Leu Glu Ile His Thr
    530                 535                 540

Val Cys Ser Gln Lys Glu Asp Ser Leu Cys Pro Asn Leu Ile Asp Asn
545                 550                 555                 560

Gly Ser Trp Pro Ala Thr Thr Thr Gln Asn Ser Val Ala Leu Lys Asn
                565                 570                 575

Ala Gly Leu Ile Ser Thr Leu Lys Lys Lys Thr Asn Lys Phe Ile Tyr
            580                 585                 590

Ala Ile His Asp Glu Thr Ser Tyr Lys Gly Lys Lys Ile Pro Lys Asp
        595                 600                 605
```

Gln Lys Ser Glu Leu Ile Asn Cys Ser Ala Gln Phe Glu Ala Asn Ala
610 615 620

Phe Glu Ala Pro Leu Thr Phe Ala Asn Ala Asp Ser Gly Leu Leu His
625 630 635 640

Ser Ser Val Lys Arg Ser Cys Ser Gln Asn Asp Ser Glu Glu Pro Thr
645 650 655

Leu Ser Leu Thr Ser Ser Phe Gly Thr Ile Leu Arg Lys Cys Ser Arg
660 665 670

Asn Glu Thr Cys Ser Asn Asn Thr Val Ile Ser Gln Asp Leu Asp Tyr
675 680 685

Lys Glu Ala Lys Cys Asn Lys Glu Lys Leu Gln Leu Phe Ile Thr Pro
690 695 700

Glu Ala Asp Ser Leu Ser Cys Leu Gln Glu Gly Gln Cys Glu Asn Asp
705 710 715 720

Pro Lys Ser Lys Lys Val Ser Asp Ile Lys Glu Glu Val Leu Ala Ala
725 730 735

Ala Cys His Pro Val Gln His Ser Lys Val Glu Tyr Ser Asp Thr Asp
740 745 750

Phe Gln Ser Gln Lys Ser Leu Leu Tyr Asp His Glu Asn Ala Ser Thr
755 760 765

Leu Ile Leu Thr Pro Thr Ser Lys Asp Val Leu Ser Asn Leu Val Met
770 775 780

Ile Ser Arg Gly Lys Glu Ser Tyr Lys Met Ser Asp Lys Leu Lys Gly
785 790 795 800

Asn Asn Tyr Glu Ser Asp Val Glu Leu Thr Lys Asn Ile Pro Met Glu
805 810 815

Lys Asn Gln Asp Val Cys Ala Leu Asn Glu Asn Tyr Lys Asn Val Glu
820 825 830

Leu Leu Pro Pro Glu Lys Tyr Met Arg Val Ala Ser Pro Ser Arg Lys
835 840 845

```
Val Gln Phe Asn Gln Asn Thr Asn Leu Arg Val Ile Gln Lys Asn Gln
    850                 855                 860

Glu Glu Thr Thr Ser Ile Ser Lys Ile Thr Val Asn Pro Asp Ser Glu
865                 870                 875                 880

Glu Leu Phe Ser Asp Asn Glu Asn Asn Phe Val Phe Gln Val Ala Asn
                885                 890                 895

Glu Arg Asn Asn Leu Ala Leu Gly Asn Thr Lys Glu Leu His Glu Thr
            900                 905                 910

Asp Leu Thr Cys Val Asn Glu Pro Ile Phe Lys Asn Ser Thr Met Val
        915                 920                 925

Leu Tyr Gly Asp Thr Gly Asp Lys Gln Ala Thr Gln Val Ser Ile Lys
    930                 935                 940

Lys Asp Leu Val Tyr Val Leu Ala Glu Glu Asn Lys Asn Ser Val Lys
945                 950                 955                 960

Gln His Ile Lys Met Thr Leu Gly Gln Asp Leu Lys Ser Asp Ile Ser
                965                 970                 975

Leu Asn Ile Asp Lys Ile Pro Glu Lys Asn Asn Asp Tyr Met Asn Lys
            980                 985                 990

Trp Ala Gly Leu Leu Gly Pro Ile  Ser Asn His Ser Phe  Gly Gly Ser
        995                 1000                1005

Phe Arg  Thr Ala Ser Asn Lys  Glu Ile Lys Leu Ser  Glu His Asn
    1010                1015                1020

Ile Lys  Lys Ser Lys Met Phe  Phe Lys Asp Ile Glu  Glu Gln Tyr
    1025                1030                1035

Pro Thr  Ser Leu Ala Cys Val  Glu Ile Val Asn Thr  Leu Ala Leu
    1040                1045                1050

Asp Asn  Gln Lys Lys Leu Ser  Lys Pro Gln Ser Ile  Asn Thr Val
    1055                1060                1065

Ser Ala  His Leu Gln Ser Ser  Val Val Val Ser Asp  Cys Lys Asn
```

1070 1075 1080

Ser His Ile Thr Pro Gln Met Leu Phe Ser Lys Gln Asp Phe Asn
1085 1090 1095

Ser Asn His Asn Leu Thr Pro Ser Gln Lys Ala Glu Ile Thr Glu
1100 1105 1110

Leu Ser Thr Ile Leu Glu Glu Ser Gly Ser Gln Phe Glu Phe Thr
1115 1120 1125

Gln Phe Arg Lys Pro Ser Tyr Ile Leu Gln Lys Ser Thr Phe Glu
1130 1135 1140

Val Pro Glu Asn Gln Met Thr Ile Leu Lys Thr Thr Ser Glu Glu
1145 1150 1155

Cys Arg Asp Ala Asp Leu His Val Ile Met Asn Ala Pro Ser Ile
1160 1165 1170

Gly Gln Val Asp Ser Ser Lys Gln Phe Glu Gly Thr Val Glu Ile
1175 1180 1185

Lys Arg Lys Phe Ala Gly Leu Leu Lys Asn Asp Cys Asn Lys Ser
1190 1195 1200

Ala Ser Gly Tyr Leu Thr Asp Glu Asn Glu Val Gly Phe Arg Gly
1205 1210 1215

Phe Tyr Ser Ala His Gly Thr Lys Leu Asn Val Ser Thr Glu Ala
1220 1225 1230

Leu Gln Lys Ala Val Lys Leu Phe Ser Asp Ile Glu Asn Ile Ser
1235 1240 1245

Glu Glu Thr Ser Ala Glu Val His Pro Ile Ser Leu Ser Ser Ser
1250 1255 1260

Lys Cys His Asp Ser Val Val Ser Met Phe Lys Ile Glu Asn His
1265 1270 1275

Asn Asp Lys Thr Val Ser Glu Lys Asn Asn Lys Cys Gln Leu Ile
1280 1285 1290

Leu Gln Asn Asn Ile Glu Met Thr Thr Gly Thr Phe Val Glu Glu
1295 1300 1305

Ile Thr Glu Asn Tyr Lys Arg Asn Thr Glu Asn Glu Asp Asn Lys
1310 1315 1320

Tyr Thr Ala Ala Ser Arg Asn Ser His Asn Leu Glu Phe Asp Gly
1325 1330 1335

Ser Asp Ser Ser Lys Asn Asp Thr Val Cys Ile His Lys Asp Glu
1340 1345 1350

Thr Asp Leu Leu Phe Thr Asp Gln His Asn Ile Cys Leu Lys Leu
1355 1360 1365

Ser Gly Gln Phe Met Lys Glu Gly Asn Thr Gln Ile Lys Glu Asp
1370 1375 1380

Leu Ser Asp Leu Thr Phe Leu Glu Val Ala Lys Ala Gln Glu Ala
1385 1390 1395

Cys His Gly Asn Thr Ser Asn Lys Glu Gln Leu Thr Ala Thr Lys
1400 1405 1410

Thr Glu Gln Asn Ile Lys Asp Phe Glu Thr Ser Asp Thr Phe Phe
1415 1420 1425

Gln Thr Ala Ser Gly Lys Asn Ile Ser Val Ala Lys Glu Ser Phe
1430 1435 1440

Asn Lys Ile Val Asn Phe Phe Asp Gln Lys Pro Glu Glu Leu His
1445 1450 1455

Asn Phe Ser Leu Asn Ser Glu Leu His Ser Asp Ile Arg Lys Asn
1460 1465 1470

Lys Met Asp Ile Leu Ser Tyr Glu Glu Thr Asp Ile Val Lys His
1475 1480 1485

Lys Ile Leu Lys Glu Ser Val Pro Val Gly Thr Gly Asn Gln Leu
1490 1495 1500

Val Thr Phe Gln Gly Gln Pro Glu Arg Asp Glu Lys Ile Lys Glu
1505 1510 1515

```
Pro Thr  Leu Leu Gly Phe His  Thr Ala Ser Gly Lys  Lys Val Lys
    1520                 1525                 1530

Ile Ala  Lys Glu Ser Leu Asp  Lys Val Lys Asn Leu  Phe Asp Glu
    1535                 1540                 1545

Lys Glu  Gln Gly Thr Ser Glu  Ile Thr Ser Phe Ser  His Gln Trp
    1550                 1555                 1560

Ala Lys  Thr Leu Lys Tyr Arg  Glu Ala Cys Lys Asp  Leu Glu Leu
    1565                 1570                 1575

Ala Cys  Glu Thr Ile Glu Ile  Thr Ala Ala Pro Lys  Cys Lys Glu
    1580                 1585                 1590

Met Gln  Asn Ser Leu Asn Asn  Asp Lys Asn Leu Val  Ser Ile Glu
    1595                 1600                 1605

Thr Val  Val Pro Pro Lys Leu  Leu Ser Asp Asn Leu  Cys Arg Gln
    1610                 1615                 1620

Thr Glu  Asn Leu Lys Thr Ser  Lys Ser Ile Phe Leu  Lys Val Lys
    1625                 1630                 1635

Val His  Glu Asn Val Glu Lys  Glu Thr Ala Lys Ser  Pro Ala Thr
    1640                 1645                 1650

Cys Tyr  Thr Asn Gln Ser Pro  Tyr Ser Val Ile Glu  Asn Ser Ala
    1655                 1660                 1665

Leu Ala  Phe Tyr Thr Ser Cys  Ser Arg Lys Thr Ser  Val Ser Gln
    1670                 1675                 1680

Thr Ser  Leu Leu Glu Ala Lys  Lys Trp Leu Arg Glu  Gly Ile Phe
    1685                 1690                 1695

Asp Gly  Gln Pro Glu Arg Ile  Asn Thr Ala Asp Tyr  Val Gly Asn
    1700                 1705                 1710

Tyr Leu  Tyr Glu Asn Asn Ser  Asn Ser Thr Ile Ala  Glu Asn Asp
    1715                 1720                 1725

Lys Asn  His Leu Ser Glu Lys  Gln Asp Thr Tyr Leu  Ser Asn Ser
    1730                 1735                 1740
```

Ser Met Ser Asn Ser Tyr Ser Tyr His Ser Asp Glu Val Tyr Asn
1745 1750 1755

Asp Ser Gly Tyr Leu Ser Lys Asn Lys Leu Asp Ser Gly Ile Glu
1760 1765 1770

Pro Val Leu Lys Asn Val Glu Asp Gln Lys Asn Thr Ser Phe Ser
1775 1780 1785

Lys Val Ile Ser Asn Val Lys Asp Ala Asn Ala Tyr Pro Gln Thr
1790 1795 1800

Val Asn Glu Asp Ile Cys Val Glu Glu Leu Val Thr Ser Ser Ser
1805 1810 1815

Pro Cys Lys Asn Lys Asn Ala Ala Ile Lys Leu Ser Ile Ser Asn
1820 1825 1830

Ser Asn Asn Phe Glu Val Gly Pro Pro Ala Phe Arg Ile Ala Ser
1835 1840 1845

Gly Lys Ile Val Cys Val Ser His Glu Thr Ile Lys Lys Val Lys
1850 1855 1860

Asp Ile Phe Thr Asp Ser Phe Ser Lys Val Ile Lys Glu Asn Asn
1865 1870 1875

Glu Asn Lys Ser Lys Ile Cys Gln Thr Lys Ile Met Ala Gly Cys
1880 1885 1890

Tyr Glu Ala Leu Asp Asp Ser Glu Asp Ile Leu His Asn Ser Leu
1895 1900 1905

Asp Asn Asp Glu Cys Ser Thr His Ser His Lys Val Phe Ala Asp
1910 1915 1920

Ile Gln Ser Glu Glu Ile Leu Gln His Asn Gln Asn Met Ser Gly
1925 1930 1935

Leu Glu Lys Val Ser Lys Ile Ser Pro Cys Asp Val Ser Leu Glu
1940 1945 1950

Thr Ser Asp Ile Cys Lys Cys Ser Ile Gly Lys Leu His Lys Ser

1955 1960 1965

Val Ser Ser Ala Asn Thr Cys Gly Ile Phe Ser Thr Ala Ser Gly
1970 1975 1980

Lys Ser Val Gln Val Ser Asp Ala Ser Leu Gln Asn Ala Arg Gln
1985 1990 1995

Val Phe Ser Glu Ile Glu Asp Ser Thr Lys Gln Val Phe Ser Lys
2000 2005 2010

Val Leu Phe Lys Ser Asn Glu His Ser Asp Gln Leu Thr Arg Glu
2015 2020 2025

Glu Asn Thr Ala Ile Arg Thr Pro Glu His Leu Ile Ser Gln Lys
2030 2035 2040

Gly Phe Ser Tyr Asn Val Val Asn Ser Ser Ala Phe Ser Gly Phe
2045 2050 2055

Ser Thr Ala Ser Gly Lys Gln Val Ser Ile Leu Glu Ser Ser Leu
2060 2065 2070

His Lys Val Lys Gly Val Leu Glu Glu Phe Asp Leu Ile Arg Thr
2075 2080 2085

Glu His Ser Leu His Tyr Ser Pro Thr Ser Arg Gln Asn Val Ser
2090 2095 2100

Lys Ile Leu Pro Arg Val Asp Lys Arg Asn Pro Glu His Cys Val
2105 2110 2115

Asn Ser Glu Met Glu Lys Thr Cys Ser Lys Glu Phe Lys Leu Ser
2120 2125 2130

Asn Asn Leu Asn Val Glu Gly Gly Ser Ser Glu Asn Asn His Ser
2135 2140 2145

Ile Lys Val Ser Pro Tyr Leu Ser Gln Phe Gln Gln Asp Lys Gln
2150 2155 2160

Gln Leu Val Leu Gly Thr Lys Val Ser Leu Val Glu Asn Ile His
2165 2170 2175

Val Leu Gly Lys Glu Gln Ala Ser Pro Lys Asn Val Lys Met Glu
2180 2185 2190

Ile Gly Lys Thr Glu Thr Phe Ser Asp Val Pro Val Lys Thr Asn
2195 2200 2205

Ile Glu Val Cys Ser Thr Tyr Ser Lys Asp Ser Glu Asn Tyr Phe
2210 2215 2220

Glu Thr Glu Ala Val Glu Ile Ala Lys Ala Phe Met Glu Asp Asp
2225 2230 2235

Glu Leu Thr Asp Ser Lys Leu Pro Ser His Ala Thr His Ser Leu
2240 2245 2250

Phe Thr Cys Pro Glu Asn Glu Glu Met Val Leu Ser Asn Ser Arg
2255 2260 2265

Ile Gly Lys Arg Arg Gly Glu Pro Leu Ile Leu Val Gly Glu Pro
2270 2275 2280

Ser Ile Lys Arg Asn Leu Leu Asn Glu Phe Asp Arg Ile Ile Glu
2285 2290 2295

Asn Gln Glu Lys Ser Leu Lys Ala Ser Lys Ser Thr Pro Asp Gly
2300 2305 2310

Thr Ile Lys Asp Arg Arg Leu Phe Met His His Val Ser Leu Glu
2315 2320 2325

Pro Ile Thr Cys Val Pro Phe Arg Thr Thr Lys Glu Arg Gln Glu
2330 2335 2340

Ile Gln Asn Pro Asn Phe Thr Ala Pro Gly Gln Glu Phe Leu Ser
2345 2350 2355

Lys Ser His Leu Tyr Glu His Leu Thr Leu Glu Lys Ser Ser Ser
2360 2365 2370

Asn Leu Ala Val Ser Gly His Pro Phe Tyr Gln Val Ser Ala Thr
2375 2380 2385

Arg Asn Glu Lys Met Arg His Leu Ile Thr Thr Gly Arg Pro Thr
2390 2395 2400

```
Lys Val  Phe Val Pro Pro Phe  Lys Thr Lys Ser His  Phe His Arg
    2405                 2410                 2415

Val Glu  Gln Cys Val Arg Asn  Ile Asn Leu Glu Glu  Asn Arg Gln
    2420                 2425                 2430

Lys Gln  Asn Ile Asp Gly His  Gly Ser Asp Asp Ser  Lys Asn Lys
    2435                 2440                 2445

Ile Asn  Asp Asn Glu Ile His  Gln Phe Asn Lys Asn  Asn Ser Asn
    2450                 2455                 2460

Gln Ala  Ala Ala Val Thr Phe  Thr Lys Cys Glu Glu  Glu Pro Leu
    2465                 2470                 2475

Asp Leu  Ile Thr Ser Leu Gln  Asn Ala Arg Asp Ile  Gln Asp Met
    2480                 2485                 2490

Arg Ile  Lys Lys Lys Gln Arg  Gln Arg Val Phe Pro  Gln Pro Gly
    2495                 2500                 2505

Ser Leu  Tyr Leu Ala Lys Thr  Ser Thr Leu Pro Arg  Ile Ser Leu
    2510                 2515                 2520

Lys Ala  Ala Val Gly Gly Gln  Val Pro Ser Ala Cys  Ser His Lys
    2525                 2530                 2535

Gln Leu  Tyr Thr Tyr Gly Val  Ser Lys His Cys Ile  Lys Ile Asn
    2540                 2545                 2550

Ser Lys  Asn Ala Glu Ser Phe  Gln Phe His Thr Glu  Asp Tyr Phe
    2555                 2560                 2565

Gly Lys  Glu Ser Leu Trp Thr  Gly Lys Gly Ile Gln  Leu Ala Asp
    2570                 2575                 2580

Gly Gly  Trp Leu Ile Pro Ser  Asn Asp Gly Lys Ala  Gly Lys Glu
    2585                 2590                 2595

Glu Phe  Tyr Arg Ala Leu Cys  Asp Thr Pro Gly Val  Asp Pro Lys
    2600                 2605                 2610

Leu Ile  Ser Arg Ile Trp Val  Tyr Asn His Tyr Arg  Trp Ile Ile
    2615                 2620                 2625
```

```
Trp Lys  Leu Ala Ala Met Glu  Cys Ala Phe Pro Lys  Glu Phe Ala
    2630                 2635                 2640

Asn Arg  Cys Leu Ser Pro Glu  Arg Val Leu Leu Gln  Leu Lys Tyr
    2645                 2650                 2655

Arg Tyr  Asp Thr Glu Ile Asp  Arg Ser Arg Arg Ser  Ala Ile Lys
    2660                 2665                 2670

Lys Ile  Met Glu Arg Asp Asp  Thr Ala Ala Lys Thr  Leu Val Leu
    2675                 2680                 2685

Cys Val  Ser Asp Ile Ile Ser  Leu Ser Ala Asn Ile  Ser Glu Thr
    2690                 2695                 2700

Ser Ser  Asn Lys Thr Ser Ser  Ala Asp Thr Gln Lys  Val Ala Ile
    2705                 2710                 2715

Ile Glu  Leu Thr Asp Gly Trp  Tyr Ala Val Lys Ala  Gln Leu Asp
    2720                 2725                 2730

Pro Pro  Leu Leu Ala Val Leu  Lys Asn Gly Arg Leu  Thr Val Gly
    2735                 2740                 2745

Gln Lys  Ile Ile Leu His Gly  Ala Glu Leu Val Gly  Ser Pro Asp
    2750                 2755                 2760

Ala Cys  Thr Pro Leu Glu Ala  Pro Glu Ser Leu Met  Leu Lys Ile
    2765                 2770                 2775

Ser Ala  Asn Ser Thr Arg Pro  Ala Arg Trp Tyr Thr  Lys Leu Gly
    2780                 2785                 2790

Phe Phe  Pro Asp Pro Arg Pro  Phe Pro Leu Pro Leu  Ser Ser Leu
    2795                 2800                 2805

Phe Ser  Asp Gly Gly Asn Val  Gly Cys Val Asp Val  Ile Ile Gln
    2810                 2815                 2820

Arg Ala  Tyr Pro Ile Gln Trp  Met Glu Lys Thr Ser  Ser Gly Leu
    2825                 2830                 2835

Tyr Ile  Phe Arg Asn Glu Arg  Glu Glu Glu Lys Glu  Ala Ala Lys
```

2840 2845 2850

Tyr Val Glu Ala Gln Gln Lys Arg Leu Glu Ala Leu Phe Thr Lys
2855 2860 2865

Ile Gln Glu Glu Phe Glu Glu His Glu Glu Asn Thr Thr Lys Pro
2870 2875 2880

Tyr Leu Pro Ser Arg Ala Leu Thr Arg Gln Gln Val Arg Ala Leu
2885 2890 2895

Gln Asp Gly Ala Glu Leu Tyr Glu Ala Val Lys Asn Ala Ala Asp
2900 2905 2910

Pro Ala Tyr Leu Glu Gly Tyr Phe Ser Glu Glu Gln Leu Arg Ala
2915 2920 2925

Leu Asn Asn His Arg Gln Met Leu Asn Asp Lys Lys Gln Ala Gln
2930 2935 2940

Ile Gln Leu Glu Ile Arg Lys Ala Met Glu Ser Ala Glu Gln Lys
2945 2950 2955

Glu Gln Gly Leu Ser Arg Asp Val Thr Thr Val Trp Lys Leu Arg
2960 2965 2970

Ile Val Ser Tyr Ser Lys Lys Glu Lys Asp Ser Val Ile Leu Ser
2975 2980 2985

Ile Trp Arg Pro Ser Ser Asp Leu Tyr Ser Leu Leu Thr Glu Gly
2990 2995 3000

Lys Arg Tyr Arg Ile Tyr His Leu Ala Thr Ser Lys Ser Lys Ser
3005 3010 3015

Lys Ser Glu Arg Ala Asn Ile Gln Leu Ala Ala Thr Lys Lys Thr
3020 3025 3030

Gln Tyr Gln Gln Leu Pro Val Ser Asp Glu Ile Leu Phe Gln Ile
3035 3040 3045

Tyr Gln Pro Arg Glu Pro Leu His Phe Ser Lys Phe Leu Asp Pro
3050 3055 3060

```
Asp Phe  Gln Pro Ser Cys Ser  Glu Val Asp Leu Ile  Gly Phe Val
    3065                 3070                 3075

Val Ser  Val Val Lys Lys Thr  Gly Leu Ala Pro Phe  Val Tyr Leu
    3080                 3085                 3090

Ser Asp  Glu Cys Tyr Asn Leu  Leu Ala Ile Lys Phe  Trp Ile Asp
    3095                 3100                 3105

Leu Asn  Glu Asp Ile Ile Lys  Pro His Met Leu Ile  Ala Ala Ser
    3110                 3115                 3120

Asn Leu  Gln Trp Arg Pro Glu  Ser Lys Ser Gly Leu  Leu Thr Leu
    3125                 3130                 3135

Phe Ala  Gly Asp Phe Ser Val  Phe Ser Ala Ser Pro  Lys Glu Gly
    3140                 3145                 3150

His Phe  Gln Glu Thr Phe Asn  Lys Met Lys Asn Thr  Val Glu Asn
    3155                 3160                 3165

Ile Asp  Ile Leu Cys Asn Glu  Ala Glu Asn Lys Leu  Met His Ile
    3170                 3175                 3180

Leu His  Ala Asn Asp Pro Lys  Trp Ser Thr Pro Thr  Lys Asp Cys
    3185                 3190                 3195

Thr Ser  Gly Pro Tyr Thr Ala  Gln Ile Ile Pro Gly  Thr Gly Asn
    3200                 3205                 3210

Lys Leu  Leu Met Ser Ser Pro  Asn Cys Glu Ile Tyr  Tyr Gln Ser
    3215                 3220                 3225

Pro Leu  Ser Leu Cys Met Ala  Lys Arg Lys Ser Val  Ser Thr Pro
    3230                 3235                 3240

Val Ser  Ala Gln Met Thr Ser  Lys Ser Cys Lys Gly  Glu Lys Glu
    3245                 3250                 3255

Ile Asp  Asp Gln Lys Asn Cys  Lys Lys Arg Arg Ala  Leu Asp Phe
    3260                 3265                 3270

Leu Ser  Arg Leu Pro Leu Pro  Pro Pro Val Ser Pro  Ile Cys Thr
    3275                 3280                 3285
```

```
Phe Val  Ser Pro Ala Ala Gln  Lys Ala Phe Gln Pro  Pro Arg Ser
    3290                 3295                 3300

Cys Gly  Thr Lys Tyr Glu Thr  Pro Ile Lys Lys Lys  Glu Leu Asn
    3305                 3310                 3315

Ser Pro  Gln Met Thr Pro Phe  Lys Lys Phe Asn Glu  Ile Ser Leu
    3320                 3325                 3330

Leu Glu  Ser Asn Ser Ile Ala  Asp Glu Glu Leu Ala  Leu Ile Asn
    3335                 3340                 3345

Thr Gln  Ala Leu Leu Ser Gly  Ser Thr Gly Glu Lys  Gln Phe Ile
    3350                 3355                 3360

Ser Val  Ser Glu Ser Thr Arg  Thr Ala Pro Thr Ser  Ser Glu Asp
    3365                 3370                 3375

Tyr Leu  Arg Leu Lys Arg Arg  Cys Thr Thr Ser Leu  Ile Lys Glu
    3380                 3385                 3390

Gln Glu  Ser Ser Gln Ala Ser  Thr Glu Glu Cys Glu  Lys Asn Lys
    3395                 3400                 3405

Gln Asp  Thr Ile Thr Thr Lys  Lys Tyr Ile
    3410                 3415
```

<210> 2
<211> 1863
<212> PRT
<213> Homo sapiens

<400> 2

```
Met Asp Leu Ser Ala Leu Arg Val Glu Glu Val Gln Asn Val Ile Asn
1               5                  10                  15

Ala Met Gln Lys Ile Leu Glu Cys Pro Ile Cys Leu Glu Leu Ile Lys
            20                  25                  30

Glu Pro Val Ser Thr Lys Cys Asp His Ile Phe Cys Lys Phe Cys Met
        35                  40                  45

Leu Lys Leu Leu Asn Gln Lys Lys Gly Pro Ser Gln Cys Pro Leu Cys
    50                  55                  60
```

```
Lys Asn Asp Ile Thr Lys Arg Ser Leu Gln Glu Ser Thr Arg Phe Ser
65                  70                  75                  80

Gln Leu Val Glu Glu Leu Leu Lys Ile Ile Cys Ala Phe Gln Leu Asp
                85                  90                  95

Thr Gly Leu Glu Tyr Ala Asn Ser Tyr Asn Phe Ala Lys Lys Glu Asn
            100                 105                 110

Asn Ser Pro Glu His Leu Lys Asp Glu Val Ser Ile Ile Gln Ser Met
        115                 120                 125

Gly Tyr Arg Asn Arg Ala Lys Arg Leu Leu Gln Ser Glu Pro Glu Asn
    130                 135                 140

Pro Ser Leu Gln Glu Thr Ser Leu Ser Val Gln Leu Ser Asn Leu Gly
145                 150                 155                 160

Thr Val Arg Thr Leu Arg Thr Lys Gln Arg Ile Gln Pro Gln Lys Thr
                165                 170                 175

Ser Val Tyr Ile Glu Leu Gly Ser Asp Ser Ser Glu Asp Thr Val Asn
            180                 185                 190

Lys Ala Thr Tyr Cys Ser Val Gly Asp Gln Glu Leu Leu Gln Ile Thr
        195                 200                 205

Pro Gln Gly Thr Arg Asp Glu Ile Ser Leu Asp Ser Ala Lys Lys Ala
    210                 215                 220

Ala Cys Glu Phe Ser Glu Thr Asp Val Thr Asn Thr Glu His His Gln
225                 230                 235                 240

Pro Ser Asn Asn Asp Leu Asn Thr Thr Glu Lys Arg Ala Ala Glu Arg
                245                 250                 255

His Pro Glu Lys Tyr Gln Gly Ser Ser Val Ser Asn Leu His Val Glu
            260                 265                 270

Pro Cys Gly Thr Asn Thr His Ala Ser Ser Leu Gln His Glu Asn Ser
        275                 280                 285

Ser Leu Leu Leu Thr Lys Asp Arg Met Asn Val Glu Lys Ala Glu Phe
    290                 295                 300
```

```
Cys Asn Lys Ser Lys Gln Pro Gly Leu Ala Arg Ser Gln His Asn Arg
305                 310                 315                 320

Trp Ala Gly Ser Lys Glu Thr Cys Asn Asp Arg Arg Thr Pro Ser Thr
                325                 330                 335

Glu Lys Lys Val Asp Leu Asn Ala Asp Pro Leu Cys Glu Arg Lys Glu
            340                 345                 350

Trp Asn Lys Gln Lys Leu Pro Cys Ser Glu Asn Pro Arg Asp Thr Glu
        355                 360                 365

Asp Val Pro Trp Ile Thr Leu Asn Ser Ser Ile Gln Lys Val Asn Glu
    370                 375                 380

Trp Phe Ser Arg Ser Asp Glu Leu Leu Gly Ser Asp Asp Ser His Asp
385                 390                 395                 400

Gly Glu Ser Glu Ser Asn Ala Lys Val Ala Asp Val Leu Asp Val Leu
                405                 410                 415

Asn Glu Val Asp Glu Tyr Ser Gly Ser Ser Glu Lys Ile Asp Leu Leu
            420                 425                 430

Ala Ser Asp Pro His Glu Ala Leu Ile Cys Lys Ser Glu Arg Val His
        435                 440                 445

Ser Lys Ser Val Glu Ser Asn Ile Glu Asp Lys Ile Phe Gly Lys Thr
    450                 455                 460

Tyr Arg Lys Lys Ala Ser Leu Pro Asn Leu Ser His Val Thr Glu Asn
465                 470                 475                 480

Leu Ile Ile Gly Ala Phe Val Thr Glu Pro Gln Ile Ile Gln Glu Arg
                485                 490                 495

Pro Leu Thr Asn Lys Leu Lys Arg Lys Arg Arg Pro Thr Ser Gly Leu
            500                 505                 510

His Pro Glu Asp Phe Ile Lys Lys Ala Asp Leu Ala Val Gln Lys Thr
        515                 520                 525

Pro Glu Met Ile Asn Gln Gly Thr Asn Gln Thr Glu Gln Asn Gly Gln
```

530 535 540

Val Met Asn Ile Thr Asn Ser Gly His Glu Asn Lys Thr Lys Gly Asp
545 550 555 560

Ser Ile Gln Asn Glu Lys Asn Pro Asn Pro Ile Glu Ser Leu Glu Lys
565 570 575

Glu Ser Ala Phe Lys Thr Lys Ala Glu Pro Ile Ser Ser Ser Ile Ser
580 585 590

Asn Met Glu Leu Glu Leu Asn Ile His Asn Ser Lys Ala Pro Lys Lys
595 600 605

Asn Arg Leu Arg Arg Lys Ser Ser Thr Arg His Ile His Ala Leu Glu
610 615 620

Leu Val Val Ser Arg Asn Leu Ser Pro Pro Asn Cys Thr Glu Leu Gln
625 630 635 640

Ile Asp Ser Cys Ser Ser Ser Glu Glu Ile Lys Lys Lys Lys Tyr Asn
645 650 655

Gln Met Pro Val Arg His Ser Arg Asn Leu Gln Leu Met Glu Gly Lys
660 665 670

Glu Pro Ala Thr Gly Ala Lys Lys Ser Asn Lys Pro Asn Glu Gln Thr
675 680 685

Ser Lys Arg His Asp Ser Asp Thr Phe Pro Glu Leu Lys Leu Thr Asn
690 695 700

Ala Pro Gly Ser Phe Thr Lys Cys Ser Asn Thr Ser Glu Leu Lys Glu
705 710 715 720

Phe Val Asn Pro Ser Leu Pro Arg Glu Glu Lys Glu Glu Lys Leu Glu
725 730 735

Thr Val Lys Val Ser Asn Asn Ala Glu Asp Pro Lys Asp Leu Met Leu
740 745 750

Ser Gly Glu Arg Val Leu Gln Thr Glu Arg Ser Val Glu Ser Ser Ser
755 760 765

```
Ile Ser Leu Val Pro Gly Thr Asp Tyr Gly Thr Gln Glu Ser Ile Ser
    770                 775                 780

Leu Leu Glu Val Ser Thr Leu Gly Lys Ala Lys Thr Glu Pro Asn Lys
785                 790                 795                 800

Cys Val Ser Gln Cys Ala Ala Phe Glu Asn Pro Lys Gly Leu Ile His
                805                 810                 815

Gly Cys Ser Lys Asp Asn Arg Asn Asp Thr Glu Gly Phe Lys Tyr Pro
            820                 825                 830

Leu Gly His Glu Val Asn His Ser Arg Glu Thr Ser Ile Glu Met Glu
        835                 840                 845

Glu Ser Glu Leu Asp Ala Gln Tyr Leu Gln Asn Thr Phe Lys Val Ser
    850                 855                 860

Lys Arg Gln Ser Phe Ala Pro Phe Ser Asn Pro Gly Asn Ala Glu Glu
865                 870                 875                 880

Glu Cys Ala Thr Phe Ser Ala His Ser Gly Ser Leu Lys Lys Gln Ser
                885                 890                 895

Pro Lys Val Thr Phe Glu Cys Glu Gln Lys Glu Glu Asn Gln Gly Lys
            900                 905                 910

Asn Glu Ser Asn Ile Lys Pro Val Gln Thr Val Asn Ile Thr Ala Gly
        915                 920                 925

Phe Pro Val Val Gly Gln Lys Asp Lys Pro Val Asp Asn Ala Lys Cys
    930                 935                 940

Ser Ile Lys Gly Gly Ser Arg Phe Cys Leu Ser Ser Gln Phe Arg Gly
945                 950                 955                 960

Asn Glu Thr Gly Leu Ile Thr Pro Asn Lys His Gly Leu Leu Gln Asn
                965                 970                 975

Pro Tyr Arg Ile Pro Pro Leu Phe Pro Ile Lys Ser Phe Val Lys Thr
            980                 985                 990

Lys Cys Lys Lys Asn Leu Leu Glu  Glu Asn Phe Glu Glu  His Ser Met
        995                 1000                1005
```

```
Ser Pro  Glu Arg Glu Met Gly  Asn Glu Asn Ile Pro  Ser Thr Val
    1010                 1015                 1020

Ser Thr  Ile Ser Arg Asn Asn  Ile Arg Glu Asn Val  Phe Lys Glu
    1025                 1030                 1035

Ala Ser  Ser Ser Asn Ile Asn  Glu Val Gly Ser Ser  Thr Asn Glu
    1040                 1045                 1050

Val Gly  Ser Ser Ile Asn Glu  Ile Gly Ser Ser Asp  Glu Asn Ile
    1055                 1060                 1065

Gln Ala  Glu Leu Gly Arg Asn  Arg Gly Pro Lys Leu  Asn Ala Met
    1070                 1075                 1080

Leu Arg  Leu Gly Val Leu Gln  Pro Glu Val Tyr Lys  Gln Ser Leu
    1085                 1090                 1095

Pro Gly  Ser Asn Cys Lys His  Pro Glu Ile Lys Lys  Gln Glu Tyr
    1100                 1105                 1110

Glu Glu  Val Val Gln Thr Val  Asn Thr Asp Phe Ser  Pro Tyr Leu
    1115                 1120                 1125

Ile Ser  Asp Asn Leu Glu Gln  Pro Met Gly Ser Ser  His Ala Ser
    1130                 1135                 1140

Gln Val  Cys Ser Glu Thr Pro  Asp Asp Leu Leu Asp  Asp Gly Glu
    1145                 1150                 1155

Ile Lys  Glu Asp Thr Ser Phe  Ala Glu Asn Asp Ile  Lys Glu Ser
    1160                 1165                 1170

Ser Ala  Val Phe Ser Lys Ser  Val Gln Lys Gly Glu  Leu Ser Arg
    1175                 1180                 1185

Ser Pro  Ser Pro Phe Thr His  Thr His Leu Ala Gln  Gly Tyr Arg
    1190                 1195                 1200

Arg Gly  Ala Lys Lys Leu Glu  Ser Ser Glu Glu Asn  Leu Ser Ser
    1205                 1210                 1215

Glu Asp  Glu Glu Leu Pro Cys  Phe Gln His Leu Leu  Phe Gly Lys
    1220                 1225                 1230
```

Val Asn Asn Ile Pro Ser Gln Ser Thr Arg His Ser Thr Val Ala
1235 1240 1245

Thr Glu Cys Leu Ser Lys Asn Thr Glu Glu Asn Leu Leu Ser Leu
1250 1255 1260

Lys Asn Ser Leu Asn Asp Cys Ser Asn Gln Val Ile Leu Ala Lys
1265 1270 1275

Ala Ser Gln Glu His His Leu Ser Glu Glu Thr Lys Cys Ser Ala
1280 1285 1290

Ser Leu Phe Ser Ser Gln Cys Ser Glu Leu Glu Asp Leu Thr Ala
1295 1300 1305

Asn Thr Asn Thr Gln Asp Pro Phe Leu Ile Gly Ser Ser Lys Gln
1310 1315 1320

Met Arg His Gln Ser Glu Ser Gln Gly Val Gly Leu Ser Asp Lys
1325 1330 1335

Glu Leu Val Ser Asp Asp Glu Glu Arg Gly Thr Gly Leu Glu Glu
1340 1345 1350

Asn Asn Gln Glu Glu Gln Ser Met Asp Ser Asn Leu Gly Glu Ala
1355 1360 1365

Ala Ser Gly Cys Glu Ser Glu Thr Ser Val Ser Glu Asp Cys Ser
1370 1375 1380

Gly Leu Ser Ser Gln Ser Asp Ile Leu Thr Thr Gln Gln Arg Asp
1385 1390 1395

Thr Met Gln His Asn Leu Ile Lys Leu Gln Gln Glu Met Ala Glu
1400 1405 1410

Leu Glu Ala Val Leu Glu Gln His Gly Ser Gln Pro Ser Asn Ser
1415 1420 1425

Tyr Pro Ser Ile Ile Ser Asp Ser Ser Ala Leu Glu Asp Leu Arg
1430 1435 1440

Asn Pro Glu Gln Ser Thr Ser Glu Lys Ala Val Leu Thr Ser Gln

1445 1450 1455

Lys Ser Ser Glu Tyr Pro Ile Ser Gln Asn Pro Glu Gly Leu Ser
1460 1465 1470

Ala Asp Lys Phe Glu Val Ser Ala Asp Ser Ser Thr Ser Lys Asn
1475 1480 1485

Lys Glu Pro Gly Val Glu Arg Ser Ser Pro Ser Lys Cys Pro Ser
1490 1495 1500

Leu Asp Asp Arg Trp Tyr Met His Ser Cys Ser Gly Ser Leu Gln
1505 1510 1515

Asn Arg Asn Tyr Pro Ser Gln Glu Glu Leu Ile Lys Val Val Asp
1520 1525 1530

Val Glu Glu Gln Gln Leu Glu Glu Ser Gly Pro His Asp Leu Thr
1535 1540 1545

Glu Thr Ser Tyr Leu Pro Arg Gln Asp Leu Glu Gly Thr Pro Tyr
1550 1555 1560

Leu Glu Ser Gly Ile Ser Leu Phe Ser Asp Asp Pro Glu Ser Asp
1565 1570 1575

Pro Ser Glu Asp Arg Ala Pro Glu Ser Ala Arg Val Gly Asn Ile
1580 1585 1590

Pro Ser Ser Thr Ser Ala Leu Lys Val Pro Gln Leu Lys Val Ala
1595 1600 1605

Glu Ser Ala Gln Ser Pro Ala Ala Ala His Thr Thr Asp Thr Ala
1610 1615 1620

Gly Tyr Asn Ala Met Glu Glu Ser Val Ser Arg Glu Lys Pro Glu
1625 1630 1635

Leu Thr Ala Ser Thr Glu Arg Val Asn Lys Arg Met Ser Met Val
1640 1645 1650

Val Ser Gly Leu Thr Pro Glu Glu Phe Met Leu Val Tyr Lys Phe
1655 1660 1665

```
Ala Arg  Lys His His Ile Thr  Leu Thr Asn Leu Ile  Thr Glu Glu
    1670                1675                1680

Thr Thr  His Val Val Met Lys  Thr Asp Ala Glu Phe  Val Cys Glu
    1685                1690                1695

Arg Thr  Leu Lys Tyr Phe Leu  Gly Ile Ala Gly Gly  Lys Trp Val
    1700                1705                1710

Val Ser  Tyr Phe Trp Val Thr  Gln Ser Ile Lys Glu  Arg Lys Met
    1715                1720                1725

Leu Asn  Glu His Asp Phe Glu  Val Arg Gly Asp Val  Val Asn Gly
    1730                1735                1740

Arg Asn  His Gln Gly Pro Lys  Arg Ala Arg Glu Ser  Gln Asp Arg
    1745                1750                1755

Lys Ile  Phe Arg Gly Leu Glu  Ile Cys Cys Tyr Gly  Pro Phe Thr
    1760                1765                1770

Asn Met  Pro Thr Asp Gln Leu  Glu Trp Met Val Gln  Leu Cys Gly
    1775                1780                1785

Ala Ser  Val Val Lys Glu Leu  Ser Ser Phe Thr Leu  Gly Thr Gly
    1790                1795                1800

Val His  Pro Ile Val Val Val  Gln Pro Asp Ala Trp  Thr Glu Asp
    1805                1810                1815

Asn Gly  Phe His Ala Ile Gly  Gln Met Cys Glu Ala  Pro Val Val
    1820                1825                1830

Thr Arg  Glu Trp Val Leu Asp  Ser Val Ala Leu Tyr  Gln Cys Gln
    1835                1840                1845

Glu Leu  Asp Thr Tyr Leu Ile  Pro Gln Ile Pro His  Ser His Tyr
    1850                1855                1860
```

<210> 3
<211> 339
<212> PRT
<213> Homo sapiens

<400> 3

```
Met Ala Met Gln Met Gln Leu Glu Ala Asn Ala Asp Thr Ser Val Glu
1               5                  10                  15

Glu Glu Ser Phe Gly Pro Gln Pro Ile Ser Arg Leu Glu Gln Cys Gly
            20                  25                  30

Ile Asn Ala Asn Asp Val Lys Lys Leu Glu Glu Ala Gly Phe His Thr
        35                  40                  45

Val Glu Ala Val Ala Tyr Ala Pro Lys Lys Glu Leu Ile Asn Ile Lys
    50                  55                  60

Gly Ile Ser Glu Ala Lys Ala Asp Lys Ile Leu Ala Glu Ala Ala Lys
65                  70                  75                  80

Leu Val Pro Met Gly Phe Thr Thr Ala Thr Glu Phe His Gln Arg Arg
                85                  90                  95

Ser Glu Ile Ile Gln Ile Thr Thr Gly Ser Lys Glu Leu Asp Lys Leu
            100                 105                 110

Leu Gln Gly Gly Ile Glu Thr Gly Ser Ile Thr Glu Met Phe Gly Glu
        115                 120                 125

Phe Arg Thr Gly Lys Thr Gln Ile Cys His Thr Leu Ala Val Thr Cys
    130                 135                 140

Gln Leu Pro Ile Asp Arg Gly Gly Gly Glu Gly Lys Ala Met Tyr Ile
145                 150                 155                 160

Asp Thr Glu Gly Thr Phe Arg Pro Glu Arg Leu Leu Ala Val Ala Glu
                165                 170                 175

Arg Tyr Gly Leu Ser Gly Ser Asp Val Leu Asp Asn Val Ala Tyr Ala
            180                 185                 190

Arg Ala Phe Asn Thr Asp His Gln Thr Gln Leu Leu Tyr Gln Ala Ser
        195                 200                 205

Ala Met Met Val Glu Ser Arg Tyr Ala Leu Leu Ile Val Asp Ser Ala
    210                 215                 220

Thr Ala Leu Tyr Arg Thr Asp Tyr Ser Gly Arg Gly Glu Leu Ser Ala
225                 230                 235                 240
```

```
Arg Gln Met His Leu Ala Arg Phe Leu Arg Met Leu Leu Arg Leu Ala
                245                 250                 255

Asp Glu Phe Gly Val Ala Val Val Ile Thr Asn Gln Val Val Ala Gln
            260                 265                 270

Val Asp Gly Ala Ala Met Phe Ala Ala Asp Pro Lys Lys Pro Ile Gly
        275                 280                 285

Gly Asn Ile Ile Ala His Ala Ser Thr Thr Arg Leu Tyr Leu Arg Lys
    290                 295                 300

Gly Arg Gly Glu Thr Arg Ile Cys Lys Ile Tyr Asp Ser Pro Cys Leu
305                 310                 315                 320

Pro Glu Ala Glu Ala Met Phe Ala Ile Asn Ala Asp Gly Val Gly Asp
                325                 330                 335

Ala Lys Asp
```

<210> 4
<211> 2626
<212> PRT
<213> Homo sapiens

<400> 4

```
Met Thr Thr Glu Leu Ser Ser Tyr Gly Tyr Leu Gly Ser Glu Asn Ser
1               5                   10                  15

Ala Leu Phe Asn Arg Val Cys Thr Ser Tyr Cys Glu Glu Gly Val Glu
            20                  25                  30

Ser Ala Ala Leu Leu Gly Cys Asp Asn Ser Ser Ser Thr Gly Asn Thr
        35                  40                  45

Ser Phe Ser Ser Leu Leu Arg Asp Tyr Pro Leu His Leu Phe His Met
    50                  55                  60

Lys Thr Pro Phe Pro Leu Ser Phe Ile Glu Cys Pro Ser Lys Ser Glu
65                  70                  75                  80

Leu Thr Ser Leu Gly Ile Ile Leu Tyr Phe Leu Asp Asp Met Glu Asp
                85                  90                  95
```

```
Glu Ile Phe Arg His Tyr Ala Glu Leu Arg Pro Gln Asn Phe Pro Cys
            100                 105                 110

Ser Val Arg Arg Asn Asn Ser Ala Phe Met Thr Ser Ser Asp Phe Ala
        115                 120                 125

Glu Arg Ala Ala Gly Val Tyr His Arg Glu Ala Arg Ser Gly Lys Tyr
    130                 135                 140

Lys Leu Thr Tyr Ala Glu Ala Lys Ala Val Cys Glu Phe Glu Gly Gly
145                 150                 155                 160

His Leu Ala Thr Tyr Lys Gln Leu Glu Ala Ala Arg Lys Ile Gly Phe
                165                 170                 175

His Val Cys Ala Ala Gly Trp Met Ala Lys Gly Arg Val Gly Tyr Pro
            180                 185                 190

Ile Val Lys Pro Gly Pro Asn Cys Gly Phe Gly Lys Thr Gly Ile Ile
        195                 200                 205

Asp Tyr Gly Ile Arg Leu Asn Arg Ser Glu Arg Trp Asp Ala Tyr Cys
    210                 215                 220

Tyr Asn Pro His Ala Lys Glu Cys Gly Gly Val Phe Thr Asp Pro Lys
225                 230                 235                 240

Gln Ile Phe Lys Ser Pro Gly Phe Pro Asn Glu Tyr Glu Asp Asn Gln
                245                 250                 255

Ile Cys Tyr Trp His Ile Arg Leu Lys Tyr Gly Gln Arg Ile His Leu
            260                 265                 270

Ser Phe Leu Asp Phe Asp Leu Glu Asp Asp Pro Gly Cys Leu Ala Asp
        275                 280                 285

Tyr Val Glu Ile Tyr Asp Ser Tyr Asp Asp Val His Gly Phe Val Gly
    290                 295                 300

Arg Tyr Cys Gly Asp Glu Leu Pro Asp Asp Ile Ile Ser Thr Gly Asn
305                 310                 315                 320

Val Met Thr Leu Lys Phe Leu Ser Asp Ala Ser Val Thr Ala Gly Gly
                325                 330                 335
```

Phe Gln Ile Lys Tyr Val Ala Met Asp Pro Val Ser Lys Ser Ser Gln
340 345 350

Gly Lys Asn Thr Lys Val Arg Met Gln Arg Asp Leu Val Asp Thr Ala
355 360 365

Gln Arg Ser Ala Pro Gly Pro Ser Ala Arg Arg Arg Val Ala Asp Met
370 375 380

Thr Ala Arg Gly Gln Ser Pro Leu Ala Pro Leu Leu Glu Thr Leu Glu
385 390 395 400

Asp Pro Ser Ala Ser His Gly Gly Gln Thr Asp Ala Tyr Leu Thr Leu
405 410 415

Thr Ser Arg Met Thr Gly Glu Glu Gly Lys Glu Val Ile Thr Glu Ile
420 425 430

Glu Lys Lys Leu Pro Arg Leu Tyr Lys Val Leu Lys Val Ser Ser Ile
435 440 445

Ile Asp Ser Leu Glu Ile Leu Phe Asn Lys Gly Glu Thr His Ser Ala
450 455 460

Val Val Asp Phe Glu Ala Leu Asn Val Ile Val Arg Leu Ile Glu Gln
465 470 475 480

Ala Pro Ile Gln Met Gly Glu Glu Ala Val Arg Trp Ala Lys Leu Val
485 490 495

Ile Pro Leu Val Val His Ser Ala Gln Lys Val His Leu Arg Gly Ala
500 505 510

Thr Ala Leu Glu Met Gly Met Pro Leu Leu Leu Gln Lys Gln Gln Glu
515 520 525

Ile Ala Ser Ile Thr Glu Gln Leu Met Thr Thr Thr Leu His Arg Ser
530 535 540

Gly Ser Phe Ile Asn Ser Leu Leu Gln Leu Glu Glu Leu Gly Phe Arg
545 550 555 560

Ser Gly Ala Pro Met Ile Lys Lys Ile Ala Phe Ile Ala Trp Lys Ser

565 570 575

Leu Ile Asp Asn Phe Ala Leu Asn Pro Asp Ile Leu Cys Ser Ala Lys
580 585 590

Arg Leu Lys Leu Leu Met Gln Pro Leu Ser Ser Ile His Val Arg Thr
595 600 605

Glu Thr Leu Ala Leu Thr Lys Leu Glu Val Trp Trp Tyr Leu Leu Met
610 615 620

Arg Leu Gly Pro His Leu Pro Ala Asn Phe Glu Gln Val Cys Val Pro
625 630 635 640

Leu Ile Gln Ser Thr Ile Ser Ile Asp Ser Asn Ala Ser Pro Gln Gly
645 650 655

Asn Ser Cys His Val Ala Thr Ser Pro Gly Leu Asn Pro Met Thr Pro
660 665 670

Val His Lys Gly Ala Ser Ser Pro Tyr Gly Ala Pro Gly Thr Pro Arg
675 680 685

Met Asn Leu Ser Ser Asn Leu Gly Gly Met Ala Thr Ile Pro Ser Ile
690 695 700

Gln Leu Leu Gly Leu Glu Met Leu Leu His Phe Leu Leu Gly Pro Glu
705 710 715 720

Ala Leu Ser Phe Ala Lys Gln Asn Lys Leu Val Leu Ser Leu Glu Pro
725 730 735

Leu Glu His Pro Leu Ile Ser Ser Pro Ser Phe Phe Ser Lys His Ala
740 745 750

Asn Thr Leu Ile Thr Ala Val His Asp Ser Phe Val Ala Val Gly Lys
755 760 765

Asp Ala Pro Gly Asn Lys Lys Glu Lys Pro Gly Ser Glu Val Leu Thr
770 775 780

Leu Leu Leu Lys Ser Leu Glu Ser Ile Val Lys Ser Glu Val Phe Pro
785 790 795 800

```
Val Ser Lys Thr Leu Gly Thr Pro Ala Leu Phe Leu Ile Gln Leu Ile
                805                 810                 815

Phe Asn Asn Phe Leu Glu Cys Gly Val Ser Asp Glu Arg Phe Phe Leu
            820                 825                 830

Ser Leu Glu Ser Leu Val Gly Cys Val Leu Ser Gly Pro Thr Ser Pro
        835                 840                 845

Leu Ala Phe Ser Asp Ser Val Leu Asn Val Ile Asn Gln Asn Ala Lys
    850                 855                 860

Gln Leu Glu Asn Lys Glu His Leu Trp Lys Met Trp Ser Val Ile Val
865                 870                 875                 880

Thr Pro Leu Thr Glu Leu Ile Asn Gln Thr Asn Glu Val Asn Gln Gly
                885                 890                 895

Asp Ala Leu Glu His Asn Phe Ser Ala Ile Tyr Gly Ala Leu Thr Leu
            900                 905                 910

Pro Val Asn His Ile Phe Ser Glu Gln Arg Phe Pro Val Ala Thr Met
        915                 920                 925

Lys Thr Leu Leu Arg Thr Trp Ser Glu Leu Tyr Arg Ala Phe Ala Arg
    930                 935                 940

Cys Ala Ala Leu Val Ala Thr Ala Glu Glu Asn Leu Cys Cys Glu Glu
945                 950                 955                 960

Leu Ser Ser Lys Ile Met Ser Ser Leu Glu Asp Glu Gly Phe Ser Asn
                965                 970                 975

Leu Leu Phe Val Asp Arg Ile Ile Tyr Ile Ile Thr Val Met Val Asp
            980                 985                 990

Cys Ile Asp Phe Ser Pro Tyr Asn  Ile Lys Tyr Gln Pro  Lys Val Lys
        995                 1000                1005

Ser Pro  Gln Arg Pro Ser Asp  Trp Ser Lys Lys Lys  Asn Glu Pro
    1010                1015                1020

Leu Gly  Lys Leu Thr Ser Leu  Phe Lys Leu Ile Val  Lys Val Ile
    1025                1030                1035
```

Tyr Ser Phe His Thr Leu Ser Phe Lys Glu Ala His Ser Asp Thr
1040 1045 1050

Leu Phe Thr Ile Gly Asn Ser Ile Thr Gly Ile Ile Ser Ser Val
1055 1060 1065

Leu Gly His Ile Ser Leu Pro Ser Met Ile Arg Lys Ile Phe Ala
1070 1075 1080

Thr Leu Thr Arg Pro Leu Ala Leu Phe Tyr Glu Asn Ser Lys Leu
1085 1090 1095

Asp Glu Val Pro Lys Val Tyr Ser Cys Leu Asn Asn Lys Leu Glu
1100 1105 1110

Lys Leu Leu Gly Glu Ile Ile Ala Cys Leu Gln Phe Ser Tyr Thr
1115 1120 1125

Gly Thr Tyr Asp Ser Glu Leu Leu Glu Gln Leu Ser Pro Leu Leu
1130 1135 1140

Cys Ile Ile Phe Leu His Lys Asn Lys Gln Ile Arg Lys Gln Ser
1145 1150 1155

Ala Gln Phe Trp Asn Ala Thr Phe Ala Lys Val Met Met Leu Val
1160 1165 1170

Tyr Pro Glu Glu Leu Lys Pro Val Leu Thr Gln Ala Lys Gln Lys
1175 1180 1185

Phe Leu Leu Leu Leu Pro Gly Leu Glu Thr Val Glu Met Met Glu
1190 1195 1200

Glu Ser Ser Gly Pro Tyr Ser Asp Gly Leu Lys Leu Glu Ser Ser
1205 1210 1215

Ser Leu Lys Val Lys Gly Glu Ile Leu Leu Glu Glu Glu Lys Ser
1220 1225 1230

Thr Asp Phe Val Phe Ile Pro Pro Glu Gly Lys Asp Ala Lys Glu
1235 1240 1245

Arg Ile Leu Thr Asp His Gln Lys Glu Val Leu Lys Thr Lys Arg
1250 1255 1260

Phe Glu Glu Gln Met Asp Ser Asp Ile Val Ile Pro Gln Asp Val
1265 1270 1275

Thr Glu Asp Cys Gly Met Ala Glu His Leu Glu Lys Ser Ser Leu
1280 1285 1290

Ser Asn Asn Glu Cys Gly Ser Leu Asp Lys Thr Ser Pro Glu Met
1295 1300 1305

Ser Asn Ser Asn Asn Asp Glu Arg Lys Lys Ala Leu Ile Ser Ser
1310 1315 1320

Arg Lys Thr Ser Thr Glu Cys Ala Ser Ser Thr Glu Asn Ser Phe
1325 1330 1335

Val Val Ser Ser Ser Ser Val Ser Asn Thr Thr Val Ala Gly Thr
1340 1345 1350

Pro Pro Tyr Pro Thr Ser Arg Arg Gln Thr Phe Ile Thr Leu Glu
1355 1360 1365

Lys Phe Asp Gly Ser Glu Asn Arg Pro Phe Ser Pro Ser Pro Leu
1370 1375 1380

Asn Asn Ile Ser Ser Thr Val Thr Val Lys Asn Asn Gln Glu Thr
1385 1390 1395

Met Ile Lys Thr Asp Phe Leu Pro Lys Ala Lys Gln Arg Glu Gly
1400 1405 1410

Thr Phe Ser Lys Ser Asp Ser Glu Lys Ile Val Asn Gly Thr Lys
1415 1420 1425

Arg Ser Ser Arg Arg Ala Gly Lys Ala Glu Gln Thr Gly Asn Lys
1430 1435 1440

Arg Ser Lys Pro Leu Met Arg Ser Glu Pro Glu Lys Asn Thr Glu
1445 1450 1455

Glu Ser Val Glu Gly Ile Val Val Leu Glu Asn Asn Pro Pro Gly
1460 1465 1470

Leu Leu Asn Gln Thr Glu Cys Val Ser Asp Asn Gln Val His Leu

1475 1480 1485

Ser Glu Ser Thr Met Glu His Asp Asn Thr Lys Leu Lys Ala Ala
1490 1495 1500

Thr Val Glu Asn Ala Val Leu Leu Glu Thr Asn Thr Val Glu Glu
1505 1510 1515

Lys Asn Val Glu Ile Asn Leu Glu Ser Lys Glu Asn Thr Pro Pro
1520 1525 1530

Val Val Ile Ser Ala Asp Gln Met Val Asn Glu Asp Ser Gln Val
1535 1540 1545

Gln Ile Thr Pro Asn Gln Lys Thr Leu Arg Arg Ser Ser Arg Arg
1550 1555 1560

Arg Ser Glu Val Val Glu Ser Thr Thr Glu Ser Gln Asp Lys Glu
1565 1570 1575

Asn Ser His Gln Lys Lys Glu Arg Arg Lys Glu Glu Glu Lys Pro
1580 1585 1590

Leu Gln Lys Ser Pro Leu His Ile Lys Asp Asp Val Leu Pro Lys
1595 1600 1605

Gln Lys Leu Ile Ala Glu Gln Thr Leu Gln Glu Asn Leu Ile Glu
1610 1615 1620

Lys Gly Ser Asn Leu His Glu Lys Thr Leu Gly Glu Thr Ser Ala
1625 1630 1635

Asn Ala Glu Thr Glu Gln Asn Lys Lys Lys Ala Asp Pro Glu Asn
1640 1645 1650

Ile Lys Ser Glu Gly Asp Gly Thr Gln Asp Ile Val Asp Lys Ser
1655 1660 1665

Ser Glu Lys Leu Val Arg Gly Arg Thr Arg Tyr Gln Thr Arg Arg
1670 1675 1680

Ala Ser Gln Gly Leu Leu Ser Ser Ile Glu Asn Ser Glu Ser Asp
1685 1690 1695

```
Ser Ser  Glu Ala Lys Glu Glu  Gly Ser Arg Lys Lys  Arg Ser Gly
    1700                1705                1710

Lys Trp  Lys Asn Lys Ser Asn  Glu Ser Val Asp Ile  Gln Asp Gln
    1715                1720                1725

Glu Glu  Lys Val Val Lys Gln  Glu Cys Ile Lys Ala  Glu Asn Gln
    1730                1735                1740

Ser His  Asp Tyr Lys Ala Thr  Ser Glu Glu Asp Val  Ser Ile Lys
    1745                1750                1755

Ser Pro  Ile Cys Glu Lys Gln  Asp Glu Ser Asn Thr  Val Ile Cys
    1760                1765                1770

Gln Asp  Ser Thr Val Thr Ser  Asp Leu Leu Gln Val  Pro Asp Asp
    1775                1780                1785

Leu Pro  Asn Val Cys Glu Glu  Lys Asn Glu Thr Ser  Lys Tyr Ala
    1790                1795                1800

Glu Tyr  Ser Phe Thr Ser Leu  Pro Val Pro Glu Ser  Asn Leu Arg
    1805                1810                1815

Thr Arg  Asn Ala Ile Lys Arg  Leu His Lys Arg Asp  Ser Phe Asp
    1820                1825                1830

Asn Cys  Ser Leu Gly Glu Ser  Ser Lys Ile Gly Ile  Ser Asp Ile
    1835                1840                1845

Ser Ser  Leu Ser Glu Lys Thr  Phe Gln Thr Leu Glu  Cys Gln His
    1850                1855                1860

Lys Arg  Ser Arg Arg Val Arg  Arg Ser Lys Gly Cys  Asp Cys Cys
    1865                1870                1875

Gly Glu  Lys Ser Gln Pro Gln  Glu Lys Ser Leu Ile  Gly Leu Lys
    1880                1885                1890

Asn Thr  Glu Asn Asn Asp Val  Glu Ile Ser Glu Thr  Lys Lys Ala
    1895                1900                1905

Asp Val  Gln Ala Pro Val Ser  Pro Ser Glu Thr Ser  Gln Ala Asn
    1910                1915                1920
```

Pro Tyr Ser Glu Gly Gln Phe Leu Asp Glu His His Ser Val Asn
1925 1930 1935

Phe His Leu Gly Leu Lys Glu Asp Asn Asp Thr Ile Asn Asp Ser
1940 1945 1950

Leu Ile Val Ser Glu Thr Lys Ser Lys Glu Asn Thr Met Gln Glu
1955 1960 1965

Ser Leu Pro Ser Gly Ile Val Asn Phe Arg Glu Glu Ile Cys Asp
1970 1975 1980

Met Asp Ser Ser Glu Ala Met Ser Leu Glu Ser Gln Glu Ser Pro
1985 1990 1995

Asn Glu Asn Phe Lys Thr Val Gly Pro Cys Leu Gly Asp Ser Lys
2000 2005 2010

Asn Val Ser Gln Glu Ser Leu Glu Thr Lys Glu Glu Lys Pro Glu
2015 2020 2025

Glu Thr Pro Lys Met Glu Leu Ser Leu Glu Asn Val Thr Val Glu
2030 2035 2040

Gly Asn Ala Cys Lys Val Thr Glu Ser Asn Leu Glu Lys Ala Lys
2045 2050 2055

Thr Met Glu Leu Asn Val Gly Asn Glu Ala Ser Phe His Gly Gln
2060 2065 2070

Glu Arg Thr Lys Thr Gly Ile Ser Glu Glu Ala Ala Ile Glu Glu
2075 2080 2085

Asn Lys Arg Asn Asp Asp Ser Glu Ala Asp Thr Ala Lys Leu Asn
2090 2095 2100

Ala Lys Glu Val Ala Thr Glu Glu Phe Asn Ser Asp Ile Ser Leu
2105 2110 2115

Ser Asp Asn Thr Thr Pro Val Lys Leu Asn Ala Gln Thr Glu Ile
2120 2125 2130

Ser Glu Gln Thr Ala Ala Gly Glu Leu Asp Gly Gly Asn Asp Val
2135 2140 2145

Ser Asp Leu His Ser Ser Glu Glu Thr Asn Thr Lys Met Lys Asn
2150 2155 2160

Asn Glu Glu Met Met Ile Gly Glu Ala Met Ala Glu Thr Gly His
2165 2170 2175

Asp Gly Glu Thr Glu Asn Glu Gly Ile Thr Thr Lys Thr Ser Lys
2180 2185 2190

Pro Asp Glu Ala Glu Thr Asn Met Leu Thr Ala Glu Met Asp Asn
2195 2200 2205

Phe Val Cys Asp Thr Val Glu Met Ser Thr Glu Glu Gly Ile Ile
2210 2215 2220

Asp Ala Asn Lys Thr Glu Thr Asn Thr Glu Tyr Ser Lys Ser Glu
2225 2230 2235

Glu Lys Leu Asp Asn Asn Gln Met Val Met Glu Ser Asp Ile Leu
2240 2245 2250

Gln Glu Asp His His Thr Ser Gln Lys Val Glu Glu Pro Ser Gln
2255 2260 2265

Cys Leu Ala Ser Gly Thr Ala Ile Ser Glu Leu Ile Ile Glu Asp
2270 2275 2280

Asn Asn Ala Ser Pro Gln Lys Leu Arg Glu Leu Asp Pro Ser Leu
2285 2290 2295

Val Ser Ala Asn Asp Ser Pro Ser Gly Met Gln Thr Arg Cys Val
2300 2305 2310

Trp Ser Pro Leu Ala Ser Pro Ser Thr Ser Ile Leu Lys Arg Gly
2315 2320 2325

Leu Lys Arg Ser Gln Glu Asp Glu Ile Ser Ser Pro Val Asn Lys
2330 2335 2340

Val Arg Arg Val Ser Phe Ala Asp Pro Ile Tyr Gln Ala Gly Leu
2345 2350 2355

Ala Asp Asp Ile Asp Arg Arg Cys Ser Ile Val Arg Ser His Ser

2360 2365 2370

Ser Asn Ser Ser Pro Ile Gly Lys Ser Val Lys Thr Ser Pro Thr
2375 2380 2385

Thr Gln Ser Lys Ser Val Asp Leu Cys Val Thr Ala Ser Glu Ile
2390 2395 2400

Tyr Ser Lys Ile Ser Glu Met Ala Lys Glu Ser Ile Pro Cys Pro
2405 2410 2415

Thr Glu Ser Val Tyr Pro Pro Leu Val Asn Cys Val Ala Pro Val
2420 2425 2430

Asp Ile Ile Leu Pro Gln Ile Thr Ser Asn Met Trp Ala Arg Gly
2435 2440 2445

Leu Gly Gln Leu Ile Arg Ala Lys Asn Ile Lys Thr Ile Gly Asp
2450 2455 2460

Leu Ser Thr Leu Thr Ala Ser Glu Ile Lys Thr Leu Pro Ile Arg
2465 2470 2475

Ser Pro Lys Val Ser Asn Val Lys Lys Ala Leu Arg Ile Tyr His
2480 2485 2490

Glu Gln Gln Val Lys Thr Arg Gly Leu Glu Glu Ile Pro Val Phe
2495 2500 2505

Asp Ile Ser Glu Lys Thr Val Asn Gly Ile Glu Asn Lys Ser Leu
2510 2515 2520

Ser Pro Asp Glu Glu Arg Leu Val Ser Asp Ile Ile Asp Pro Val
2525 2530 2535

Ala Leu Glu Ile Pro Leu Ser Lys Asn Leu Leu Ala Gln Ile Ser
2540 2545 2550

Ala Leu Ala Leu Gln Leu Asp Ser Glu Asp Leu His Asn Tyr Ser
2555 2560 2565

Gly Ser Gln Leu Phe Glu Met His Glu Lys Leu Ser Ser Glu Gly
2570 2575 2580

Ile Phe Leu Ala Thr Val Cys Gln Phe Ile Ile Val Asp Lys Ala
2585 2590 2595

Glu Phe Thr Gly Gln Gln Ala Tyr Met Leu Ile Glu Val Asp Ala
2600 2605 2610

Leu Arg Ser Asp Glu Leu Lys Arg Met Glu Lys Ala Asp
2615 2620 2625

<210> 5
<211> 1186
<212> PRT
<213> Homo sapiens

<400> 5

Met Asp Glu Pro Pro Gly Lys Pro Leu Ser Cys Glu Glu Lys Glu Lys
1 5 10 15

Leu Lys Glu Lys Leu Ala Phe Leu Lys Arg Glu Tyr Ser Lys Thr Leu
20 25 30

Ala Arg Leu Gln Arg Ala Gln Arg Ala Glu Lys Ile Lys His Ser Ile
35 40 45

Lys Lys Thr Val Glu Glu Gln Asp Cys Leu Ser Gln Gln Asp Leu Ser
50 55 60

Pro Gln Leu Lys His Ser Glu Pro Lys Asn Lys Ile Cys Val Tyr Asp
65 70 75 80

Lys Leu His Ile Lys Thr His Leu Asp Glu Glu Thr Gly Glu Lys Thr
85 90 95

Ser Ile Thr Leu Asp Val Gly Pro Glu Ser Phe Asn Pro Gly Asp Gly
100 105 110

Pro Gly Gly Leu Pro Ile Gln Arg Thr Asp Asp Thr Gln Glu His Phe
115 120 125

Pro His Arg Val Ser Asp Pro Ser Gly Glu Gln Lys Gln Lys Leu Pro
130 135 140

Ser Arg Arg Lys Lys Gln Gln Lys Arg Thr Phe Ile Ser Gln Glu Arg
145 150 155 160

```
Asp Cys Val Phe Gly Thr Asp Ser Leu Arg Leu Ser Gly Lys Arg Leu
                 165                 170                 175

Lys Glu Gln Glu Glu Ile Ser Ser Lys Asn Pro Ala Arg Ser Pro Val
            180                 185                 190

Thr Glu Ile Arg Thr His Leu Leu Ser Leu Lys Ser Glu Leu Pro Asp
        195                 200                 205

Ser Pro Glu Pro Val Thr Glu Ile Asn Glu Asp Ser Val Leu Ile Pro
    210                 215                 220

Pro Thr Ala Gln Pro Glu Lys Gly Val Asp Thr Phe Leu Arg Arg Pro
225                 230                 235                 240

Asn Phe Thr Arg Ala Thr Thr Val Pro Leu Gln Thr Leu Ser Asp Ser
                245                 250                 255

Gly Ser Ser Gln His Leu Glu His Ile Pro Pro Lys Gly Ser Ser Glu
            260                 265                 270

Leu Thr Thr His Asp Leu Lys Asn Ile Arg Phe Thr Ser Pro Val Ser
        275                 280                 285

Leu Glu Ala Gln Gly Lys Lys Met Thr Val Ser Thr Asp Asn Leu Leu
    290                 295                 300

Val Asn Lys Ala Ile Ser Lys Ser Gly Gln Leu Pro Thr Ser Ser Asn
305                 310                 315                 320

Leu Glu Ala Asn Ile Ser Cys Ser Leu Asn Glu Leu Thr Tyr Asn Asn
                325                 330                 335

Leu Pro Ala Asn Glu Asn Gln Asn Leu Lys Glu Gln Asn Gln Thr Glu
            340                 345                 350

Lys Ser Leu Lys Ser Pro Ser Asp Thr Leu Asp Gly Arg Asn Glu Asn
        355                 360                 365

Leu Gln Glu Ser Glu Ile Leu Ser Gln Pro Lys Ser Leu Ser Leu Glu
    370                 375                 380

Ala Thr Ser Pro Leu Ser Ala Glu Lys His Ser Cys Thr Val Pro Glu
385                 390                 395                 400
```

Gly Leu Leu Phe Pro Ala Glu Tyr Tyr Val Arg Thr Thr Arg Ser Met
405 410 415

Ser Asn Cys Gln Arg Lys Val Ala Val Glu Ala Val Ile Gln Ser His
420 425 430

Leu Asp Val Lys Lys Lys Gly Phe Lys Asn Lys Asn Lys Asp Ala Ser
435 440 445

Lys Asn Leu Asn Leu Ser Asn Glu Glu Thr Asp Gln Ser Glu Ile Arg
450 455 460

Met Ser Gly Thr Cys Thr Gly Gln Pro Ser Ser Arg Thr Ser Gln Lys
465 470 475 480

Leu Leu Ser Leu Thr Lys Val Ser Ser Pro Ala Gly Pro Thr Glu Asp
485 490 495

Asn Asp Leu Ser Arg Lys Ala Val Ala Gln Ala Pro Gly Arg Arg Tyr
500 505 510

Thr Gly Lys Arg Lys Ser Ala Cys Thr Pro Ala Ser Asp His Cys Glu
515 520 525

Pro Leu Leu Pro Thr Ser Ser Leu Ser Ile Val Asn Arg Ser Lys Glu
530 535 540

Glu Val Thr Ser His Lys Tyr Gln His Glu Lys Leu Phe Ile Gln Val
545 550 555 560

Lys Gly Lys Lys Ser Arg His Gln Lys Glu Asp Ser Leu Ser Trp Ser
565 570 575

Asn Ser Ala Tyr Leu Ser Leu Asp Asp Asp Ala Phe Thr Ala Pro Phe
580 585 590

His Arg Asp Gly Met Leu Ser Leu Lys Gln Leu Leu Ser Phe Leu Ser
595 600 605

Ile Thr Asp Phe Gln Leu Pro Asp Glu Asp Phe Gly Pro Leu Lys Leu
610 615 620

Glu Lys Val Lys Ser Cys Ser Glu Lys Pro Val Glu Pro Phe Glu Ser
625 630 635 640

Lys Met Phe Gly Glu Arg His Leu Lys Glu Gly Ser Cys Ile Phe Pro
645 650 655

Glu Glu Leu Ser Pro Lys Arg Met Asp Thr Glu Met Glu Asp Leu Glu
660 665 670

Glu Asp Leu Ile Val Leu Pro Gly Lys Ser His Pro Lys Arg Pro Asn
675 680 685

Ser Gln Ser Gln His Thr Lys Thr Gly Leu Ser Ser Ser Ile Leu Leu
690 695 700

Tyr Thr Pro Leu Asn Thr Val Ala Pro Asp Asp Asn Asp Arg Pro Thr
705 710 715 720

Thr Asp Met Cys Ser Pro Ala Phe Pro Ile Leu Gly Thr Thr Pro Ala
725 730 735

Phe Gly Pro Gln Gly Ser Tyr Glu Lys Ala Ser Thr Glu Val Ala Gly
740 745 750

Arg Thr Cys Cys Thr Pro Gln Leu Ala His Leu Lys Asp Ser Val Cys
755 760 765

Leu Ala Ser Asp Thr Lys Gln Phe Asp Ser Ser Gly Ser Pro Ala Lys
770 775 780

Pro His Thr Thr Leu Gln Val Ser Gly Arg Gln Gly Gln Pro Thr Cys
785 790 795 800

Asp Cys Asp Ser Val Pro Pro Gly Thr Pro Pro Pro Ile Glu Ser Phe
805 810 815

Thr Phe Lys Glu Asn Gln Leu Cys Arg Asn Thr Cys Gln Glu Leu His
820 825 830

Lys His Ser Val Glu Gln Thr Glu Thr Ala Glu Leu Pro Ala Ser Asp
835 840 845

Ser Ile Asn Pro Gly Asn Leu Gln Leu Val Ser Glu Leu Lys Asn Pro
850 855 860

Ser Gly Ser Cys Ser Val Asp Val Ser Ala Met Phe Trp Glu Arg Ala

865 870 875 880

Gly Cys Lys Glu Pro Cys Ile Ile Thr Ala Cys Glu Asp Val Val Ser
885 890 895

Leu Trp Lys Ala Leu Asp Ala Trp Gln Trp Glu Lys Leu Tyr Thr Trp
900 905 910

His Phe Ala Glu Val Pro Val Leu Gln Ile Val Pro Val Pro Asp Val
915 920 925

Tyr Asn Leu Val Cys Val Ala Leu Gly Asn Leu Glu Ile Arg Glu Ile
930 935 940

Arg Ala Leu Phe Cys Ser Ser Asp Asp Glu Ser Glu Lys Gln Val Leu
945 950 955 960

Leu Lys Ser Gly Asn Ile Lys Ala Val Leu Gly Leu Thr Lys Arg Arg
965 970 975

Leu Val Ser Ser Ser Gly Thr Leu Ser Asp Gln Gln Val Glu Val Met
980 985 990

Thr Phe Ala Glu Asp Gly Gly Gly Lys Glu Asn Gln Phe Leu Met Pro
995 1000 1005

Pro Glu Glu Thr Ile Leu Thr Phe Ala Glu Val Gln Gly Met Gln
1010 1015 1020

Glu Ala Leu Leu Gly Thr Thr Ile Met Asn Asn Ile Val Ile Trp
1025 1030 1035

Asn Leu Lys Thr Gly Gln Leu Leu Lys Lys Met His Ile Asp Asp
1040 1045 1050

Ser Tyr Gln Ala Ser Val Cys His Lys Ala Tyr Ser Glu Met Gly
1055 1060 1065

Leu Leu Phe Ile Val Leu Ser His Pro Cys Ala Lys Glu Ser Glu
1070 1075 1080

Ser Leu Arg Ser Pro Val Phe Gln Leu Ile Val Ile Asn Pro Lys
1085 1090 1095

```
Thr Thr  Leu Ser Val Gly Val  Met Leu Tyr Cys Leu  Pro Pro Gly
    1100                1105                1110

Gln Ala  Gly Arg Phe Leu Glu  Gly Asp Val Lys Asp  His Cys Ala
    1115                1120                1125

Ala Ala  Ile Leu Thr Ser Gly  Thr Ile Ala Ile Trp  Asp Leu Leu
    1130                1135                1140

Leu Gly  Gln Cys Thr Ala Leu  Leu Pro Pro Val Ser  Asp Gln His
    1145                1150                1155

Trp Ser  Phe Val Lys Trp Ser  Gly Thr Asp Ser His  Leu Leu Ala
    1160                1165                1170

Gly Gln  Lys Asp Gly Asn Ile  Phe Val Tyr His Tyr  Ser
    1175                1180                1185
```

<210> 6
<211> 982
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Ala Pro Arg Leu Gln Leu Glu Lys Ala Ala Trp Arg Trp Ala Glu
1               5                  10                  15

Thr Val Arg Pro Glu Glu Val Ser Gln Glu His Ile Glu Thr Ala Tyr
            20                  25                  30

Arg Ile Trp Leu Glu Pro Cys Ile Arg Gly Val Cys Arg Arg Asn Cys
        35                  40                  45

Lys Gly Asn Pro Asn Cys Leu Val Gly Ile Gly Glu His Ile Trp Leu
    50                  55                  60

Gly Glu Ile Asp Glu Asn Ser Phe His Asn Ile Asp Asp Pro Asn Cys
65                  70                  75                  80

Glu Arg Arg Lys Lys Asn Ser Phe Val Gly Leu Thr Asn Leu Gly Ala
                85                  90                  95

Thr Cys Tyr Val Asn Thr Phe Leu Gln Val Trp Phe Leu Asn Leu Glu
            100                 105                 110
```

```
Leu Arg Gln Ala Leu Tyr Leu Cys Pro Ser Thr Cys Ser Asp Tyr Met
        115                 120                 125

Leu Gly Asp Gly Ile Gln Glu Glu Lys Asp Tyr Glu Pro Gln Thr Ile
    130                 135                 140

Cys Glu His Leu Gln Tyr Leu Phe Ala Leu Leu Gln Asn Ser Asn Arg
145                 150                 155                 160

Arg Tyr Ile Asp Pro Ser Gly Phe Val Lys Ala Leu Gly Leu Asp Thr
                165                 170                 175

Gly Gln Gln Gln Asp Ala Gln Glu Phe Ser Lys Leu Phe Met Ser Leu
            180                 185                 190

Leu Glu Asp Thr Leu Ser Lys Gln Lys Asn Pro Asp Val Arg Asn Ile
        195                 200                 205

Val Gln Gln Gln Phe Cys Gly Glu Tyr Ala Tyr Val Thr Val Cys Asn
    210                 215                 220

Gln Cys Gly Arg Glu Ser Lys Leu Leu Ser Lys Phe Tyr Glu Leu Glu
225                 230                 235                 240

Leu Asn Ile Gln Gly His Lys Gln Leu Thr Asp Cys Ile Ser Glu Phe
                245                 250                 255

Leu Lys Glu Glu Lys Leu Glu Gly Asp Asn Arg Tyr Phe Cys Glu Asn
            260                 265                 270

Cys Gln Ser Lys Gln Asn Ala Thr Arg Lys Ile Arg Leu Leu Ser Leu
        275                 280                 285

Pro Cys Thr Leu Asn Leu Gln Leu Met Arg Phe Val Phe Asp Arg Gln
    290                 295                 300

Thr Gly His Lys Lys Lys Leu Asn Thr Tyr Ile Gly Phe Ser Glu Ile
305                 310                 315                 320

Leu Asp Met Glu Pro Tyr Val Glu His Lys Gly Gly Ser Tyr Val Tyr
                325                 330                 335

Glu Leu Ser Ala Val Leu Ile His Arg Gly Val Ser Ala Tyr Ser Gly
            340                 345                 350
```

```
His Tyr Ile Ala His Val Lys Asp Pro Gln Ser Gly Glu Trp Tyr Lys
        355                 360                 365

Phe Asn Asp Glu Asp Ile Glu Lys Met Glu Gly Lys Lys Leu Gln Leu
    370                 375                 380

Gly Ile Glu Glu Asp Leu Ala Glu Pro Ser Lys Ser Gln Thr Arg Lys
385                 390                 395                 400

Pro Lys Cys Gly Lys Gly Thr His Cys Ser Arg Asn Ala Tyr Met Leu
                405                 410                 415

Val Tyr Arg Leu Gln Thr Gln Glu Lys Pro Asn Thr Thr Val Gln Val
            420                 425                 430

Pro Ala Phe Leu Gln Glu Leu Val Asp Arg Asp Asn Ser Lys Phe Glu
        435                 440                 445

Glu Trp Cys Ile Glu Met Ala Glu Met Arg Lys Gln Ser Val Asp Lys
    450                 455                 460

Gly Lys Ala Lys His Glu Glu Val Lys Glu Leu Tyr Gln Arg Leu Pro
465                 470                 475                 480

Ala Gly Ala Glu Pro Tyr Glu Phe Val Ser Leu Glu Trp Leu Gln Lys
                485                 490                 495

Trp Leu Asp Glu Ser Thr Pro Thr Lys Pro Ile Asp Asn His Ala Cys
            500                 505                 510

Leu Cys Ser His Asp Lys Leu His Pro Asp Lys Ile Ser Ile Met Lys
        515                 520                 525

Arg Ile Ser Glu Tyr Ala Ala Asp Ile Phe Tyr Ser Arg Tyr Gly Gly
    530                 535                 540

Gly Pro Arg Leu Thr Val Lys Ala Leu Cys Lys Glu Cys Val Val Glu
545                 550                 555                 560

Arg Cys Arg Ile Leu Arg Leu Lys Asn Gln Leu Asn Glu Asp Tyr Lys
                565                 570                 575

Thr Val Asn Asn Leu Leu Lys Ala Ala Val Lys Gly Asp Gly Phe Trp
            580                 585                 590
```

Val Gly Lys Ser Ser Leu Arg Ser Trp Arg Gln Leu Ala Leu Glu Gln
595 600 605

Leu Asp Glu Gln Asp Gly Asp Ala Glu Gln Ser Asn Gly Lys Met Asn
610 615 620

Gly Ser Thr Leu Asn Lys Asp Glu Ser Lys Glu Glu Arg Lys Glu Glu
625 630 635 640

Glu Glu Leu Asn Phe Asn Glu Asp Ile Leu Cys Pro His Gly Glu Leu
645 650 655

Cys Ile Ser Glu Asn Glu Arg Arg Leu Val Ser Lys Glu Ala Trp Ser
660 665 670

Lys Leu Gln Gln Tyr Phe Pro Lys Ala Pro Glu Phe Pro Ser Tyr Lys
675 680 685

Glu Cys Cys Ser Gln Cys Lys Ile Leu Glu Arg Glu Gly Glu Glu Asn
690 695 700

Glu Ala Leu His Lys Met Ile Ala Asn Glu Gln Lys Thr Ser Leu Pro
705 710 715 720

Asn Leu Phe Gln Asp Lys Asn Arg Pro Cys Leu Ser Asn Trp Pro Glu
725 730 735

Asp Thr Asp Val Leu Tyr Ile Val Ser Gln Phe Phe Val Glu Glu Trp
740 745 750

Arg Lys Phe Val Arg Lys Pro Thr Arg Cys Ser Pro Val Ser Ser Val
755 760 765

Gly Asn Ser Ala Leu Leu Cys Pro His Gly Gly Leu Met Phe Thr Phe
770 775 780

Ala Ser Met Thr Lys Glu Asp Ser Lys Leu Ile Ala Leu Ile Trp Pro
785 790 795 800

Ser Glu Trp Gln Met Ile Gln Lys Leu Phe Val Val Asp His Val Ile
805 810 815

Lys Ile Thr Arg Ile Glu Val Gly Asp Val Asn Pro Ser Glu Thr Gln

820 825 830

Tyr Ile Ser Glu Pro Lys Leu Cys Pro Glu Cys Arg Glu Gly Leu Leu
835 840 845

Cys Gln Gln Gln Arg Asp Leu Arg Glu Tyr Thr Gln Ala Thr Ile Tyr
850 855 860

Val His Lys Val Val Asp Asn Lys Lys Val Met Lys Asp Ser Ala Pro
865 870 875 880

Glu Leu Asn Val Ser Ser Ser Glu Thr Glu Glu Asp Lys Glu Glu Ala
885 890 895

Lys Pro Asp Gly Glu Lys Asp Pro Asp Phe Asn Gln Ile Met His Ala
900 905 910

Phe Ser Val Ala Pro Phe Asp Gln Asn Leu Ser Ile Asp Gly Lys Ile
915 920 925

Leu Ser Asp Asp Cys Ala Thr Leu Gly Thr Leu Gly Val Ile Pro Glu
930 935 940

Ser Val Ile Leu Leu Lys Ala Asp Glu Pro Ile Ala Asp Tyr Ala Ala
945 950 955 960

Met Asp Asp Val Met Gln Val Cys Met Pro Glu Glu Gly Phe Lys Gly
965 970 975

Thr Gly Leu Leu Gly His
980

<210> 7
<211> 721
<212> PRT
<213> Homo sapiens

<400> 7

Met Asp Leu Ser Ala Leu Arg Val Glu Glu Val Gln Asn Val Ile Asn
1 5 10 15

Ala Met Gln Lys Ile Leu Glu Cys Pro Ile Cys Leu Glu Leu Ile Lys
20 25 30

Glu Pro Val Ser Thr Lys Cys Asp His Ile Phe Cys Lys Phe Cys Met

35 40 45

Leu Lys Leu Leu Asn Gln Lys Lys Gly Pro Ser Gln Cys Pro Leu Cys
50 55 60

Lys Asn Asp Ile Thr Lys Arg Ser Leu Gln Glu Ser Thr Arg Phe Ser
65 70 75 80

Gln Leu Val Glu Glu Leu Leu Lys Ile Ile Cys Ala Phe Gln Leu Asp
85 90 95

Thr Gly Leu Glu Tyr Ala Asn Ser Tyr Asn Phe Ala Lys Lys Glu Asn
100 105 110

Asn Ser Pro Glu His Leu Lys Asp Glu Val Ser Ile Ile Gln Ser Met
115 120 125

Gly Tyr Arg Asn Arg Ala Lys Arg Leu Leu Gln Ser Glu Pro Glu Asn
130 135 140

Pro Ser Leu Gln Glu Thr Ser Leu Ser Val Gln Leu Ser Asn Leu Gly
145 150 155 160

Thr Val Arg Thr Leu Arg Thr Lys Gln Arg Ile Gln Pro Gln Lys Thr
165 170 175

Ser Val Tyr Ile Glu Leu Gly Ser Asp Ser Ser Glu Asp Thr Val Asn
180 185 190

Lys Ala Thr Tyr Cys Ser Val Gly Asp Gln Glu Leu Leu Gln Ile Thr
195 200 205

Pro Gln Gly Thr Arg Asp Glu Ile Ser Leu Asp Ser Ala Lys Lys Gly
210 215 220

Glu Ala Ala Ser Gly Cys Glu Ser Glu Thr Ser Val Ser Glu Asp Cys
225 230 235 240

Ser Gly Leu Ser Ser Gln Ser Asp Ile Leu Thr Thr Gln Gln Arg Asp
245 250 255

Thr Met Gln His Asn Leu Ile Lys Leu Gln Gln Glu Met Ala Glu Leu
260 265 270

```
Glu Ala Val Leu Glu Gln His Gly Ser Gln Pro Ser Asn Ser Tyr Pro
        275                 280                 285

Ser Ile Ile Ser Asp Ser Ser Ala Leu Glu Asp Leu Arg Asn Pro Glu
    290                 295                 300

Gln Ser Thr Ser Glu Lys Ala Val Leu Thr Ser Gln Lys Ser Ser Glu
305                 310                 315                 320

Tyr Pro Ile Ser Gln Asn Pro Glu Gly Leu Ser Ala Asp Lys Phe Glu
                325                 330                 335

Val Ser Ala Asp Ser Ser Thr Ser Lys Asn Lys Glu Pro Gly Val Glu
            340                 345                 350

Arg Ser Ser Pro Ser Lys Cys Pro Ser Leu Asp Asp Arg Trp Tyr Met
        355                 360                 365

His Ser Cys Ser Gly Ser Leu Gln Asn Arg Asn Tyr Pro Ser Gln Glu
    370                 375                 380

Glu Leu Ile Lys Val Val Asp Val Glu Glu Gln Gln Leu Glu Glu Ser
385                 390                 395                 400

Gly Pro His Asp Leu Thr Glu Thr Ser Tyr Leu Pro Arg Gln Asp Leu
                405                 410                 415

Glu Gly Thr Pro Tyr Leu Glu Ser Gly Ile Ser Leu Phe Ser Asp Asp
            420                 425                 430

Pro Glu Ser Asp Pro Ser Glu Asp Arg Ala Pro Glu Ser Ala Arg Val
        435                 440                 445

Gly Asn Ile Pro Ser Ser Thr Ser Ala Leu Lys Val Pro Gln Leu Lys
    450                 455                 460

Val Ala Glu Ser Ala Gln Ser Pro Ala Ala Ala His Thr Thr Asp Thr
465                 470                 475                 480

Ala Gly Tyr Asn Ala Met Glu Glu Ser Val Ser Arg Glu Lys Pro Glu
                485                 490                 495

Leu Thr Ala Ser Thr Glu Arg Val Asn Lys Arg Met Ser Met Val Val
            500                 505                 510
```

```
Ser Gly Leu Thr Pro Glu Glu Phe Met Leu Val Tyr Lys Phe Ala Arg
        515                 520                 525

Lys His His Ile Thr Leu Thr Asn Leu Ile Thr Glu Glu Thr Thr His
    530                 535                 540

Val Val Met Lys Thr Asp Ala Glu Phe Val Cys Glu Arg Thr Leu Lys
545                 550                 555                 560

Tyr Phe Leu Gly Ile Ala Gly Gly Lys Trp Val Val Ser Tyr Phe Trp
                565                 570                 575

Val Thr Gln Ser Ile Lys Glu Arg Lys Met Leu Asn Glu His Asp Phe
            580                 585                 590

Glu Val Arg Gly Asp Val Val Asn Gly Arg Asn His Gln Gly Pro Lys
        595                 600                 605

Arg Ala Arg Glu Ser Gln Asp Arg Lys Ile Phe Arg Gly Leu Glu Ile
    610                 615                 620

Cys Cys Tyr Gly Pro Phe Thr Asn Met Pro Thr Asp Gln Leu Glu Trp
625                 630                 635                 640

Met Val Gln Leu Cys Gly Ala Ser Val Val Lys Glu Leu Ser Ser Phe
                645                 650                 655

Thr Leu Gly Thr Gly Val His Pro Ile Val Val Val Gln Pro Asp Ala
            660                 665                 670

Trp Thr Glu Asp Asn Gly Phe His Ala Ile Gly Gln Met Cys Glu Ala
        675                 680                 685

Pro Val Val Thr Arg Glu Trp Val Leu Asp Ser Val Ala Leu Tyr Gln
    690                 695                 700

Cys Gln Glu Leu Asp Thr Tyr Leu Ile Pro Gln Ile Pro His Ser His
705                 710                 715                 720

Tyr
```

<210> 8
<211> 719

<212> PRT
<213> Homo sapiens

<400> 8

```
Met Pro Arg Arg Lys Lys Lys Val Lys Glu Val Ser Glu Ser Arg Asn
1               5                  10                  15

Leu Glu Lys Lys Asp Val Glu Thr Thr Ser Ser Val Ser Val Lys Arg
            20                  25                  30

Lys Arg Arg Leu Glu Asp Ala Phe Ile Val Ile Ser Asp Ser Asp Gly
        35                  40                  45

Glu Glu Pro Lys Glu Glu Asn Gly Leu Gln Lys Thr Lys Thr Lys Gln
    50                  55                  60

Ser Asn Arg Ala Lys Cys Leu Ala Lys Arg Lys Ile Ala Gln Met Thr
65                  70                  75                  80

Glu Glu Glu Gln Phe Ala Leu Ala Leu Lys Met Ser Glu Gln Glu Ala
                85                  90                  95

Arg Glu Val Asn Ser Gln Glu Glu Glu Glu Glu Glu Leu Leu Arg Lys
            100                 105                 110

Ala Ile Ala Glu Ser Leu Asn Ser Cys Arg Pro Ser Asp Ala Ser Ala
        115                 120                 125

Thr Arg Ser Arg Pro Leu Ala Thr Gly Pro Ser Ser Gln Ser His Gln
    130                 135                 140

Glu Lys Thr Thr Asp Ser Gly Leu Thr Glu Gly Ile Trp Gln Leu Val
145                 150                 155                 160

Pro Pro Ser Leu Phe Lys Gly Ser His Ile Ser Gln Gly Asn Glu Ala
                165                 170                 175

Glu Glu Arg Glu Glu Pro Trp Asp His Thr Glu Lys Thr Glu Glu Glu
            180                 185                 190

Pro Val Ser Gly Ser Ser Gly Ser Trp Asp Gln Ser Ser Gln Pro Val
        195                 200                 205

Phe Glu Asn Val Asn Val Lys Ser Phe Asp Arg Cys Thr Gly His Ser
    210                 215                 220
```

```
Ala Glu His Thr Gln Cys Gly Lys Pro Gln Glu Ser Thr Gly Arg Gly
225                 230                 235                 240

Ser Ala Phe Leu Lys Ala Val Gln Gly Ser Gly Asp Thr Ser Arg His
                245                 250                 255

Cys Leu Pro Thr Leu Ala Asp Ala Lys Gly Leu Gln Asp Thr Gly Gly
            260                 265                 270

Thr Val Asn Tyr Phe Trp Gly Ile Pro Phe Cys Pro Asp Gly Val Asp
        275                 280                 285

Pro Asn Gln Tyr Thr Lys Val Ile Leu Cys Gln Leu Glu Val Tyr Gln
    290                 295                 300

Lys Ser Leu Lys Met Ala Gln Arg Gln Leu Leu Asn Lys Lys Gly Phe
305                 310                 315                 320

Gly Glu Pro Val Leu Pro Arg Pro Pro Ser Leu Ile Gln Asn Glu Cys
                325                 330                 335

Gly Gln Gly Glu Gln Ala Ser Glu Lys Asn Gly Cys Ile Ser Glu Asp
            340                 345                 350

Met Gly Asp Glu Asp Lys Glu Glu Arg Gln Glu Ser Arg Ala Ser Asp
        355                 360                 365

Trp His Ser Lys Thr Lys Asp Phe Gln Glu Ser Ser Ile Lys Ser Leu
    370                 375                 380

Lys Glu Lys Leu Leu Leu Glu Glu Glu Pro Thr Thr Ser His Gly Gln
385                 390                 395                 400

Ser Ser Gln Gly Ile Val Glu Glu Thr Ser Glu Glu Gly Asn Ser Val
                405                 410                 415

Pro Ala Ser Gln Ser Val Ala Ala Leu Thr Ser Lys Arg Ser Leu Val
            420                 425                 430

Leu Met Pro Glu Ser Ser Ala Glu Glu Ile Thr Val Cys Pro Glu Thr
        435                 440                 445

Gln Leu Ser Ser Ser Glu Thr Phe Asp Leu Glu Arg Glu Val Ser Pro
```

```
    450                 455                 460

Gly Ser Arg Asp Ile Leu Asp Gly Val Arg Ile Ile Met Ala Asp Lys
465                 470                 475                 480

Glu Val Gly Asn Lys Glu Asp Ala Glu Lys Glu Val Ala Ile Ser Thr
                485                 490                 495

Phe Ser Ser Ser Asn Gln Val Ser Cys Pro Leu Cys Asp Gln Cys Phe
            500                 505                 510

Pro Pro Thr Lys Ile Gly Arg His Ala Met Tyr Cys Asn Gly Leu Met
        515                 520                 525

Glu Glu Asp Thr Val Leu Thr Arg Arg Gln Lys Glu Ala Lys Thr Lys
    530                 535                 540

Ser Asp Ser Gly Thr Ala Ala Gln Thr Ser Leu Asp Ile Asp Lys Asn
545                 550                 555                 560

Glu Lys Cys Tyr Leu Cys Lys Ser Leu Val Pro Phe Arg Glu Tyr Gln
                565                 570                 575

Cys His Val Asp Ser Cys Leu Gln Leu Ala Lys Ala Asp Gln Gly Asp
            580                 585                 590

Gly Pro Glu Gly Ser Gly Arg Ala Cys Ser Thr Val Glu Gly Lys Trp
        595                 600                 605

Gln Gln Arg Leu Lys Asn Pro Lys Glu Lys Gly His Ser Glu Gly Arg
    610                 615                 620

Leu Leu Ser Phe Leu Glu Gln Ser Glu His Lys Thr Ser Asp Ala Asp
625                 630                 635                 640

Ile Lys Ser Ser Glu Thr Gly Ala Phe Arg Val Pro Ser Pro Gly Met
                645                 650                 655

Glu Glu Ala Gly Cys Ser Arg Glu Met Gln Ser Ser Phe Thr Arg Arg
            660                 665                 670

Asp Leu Asn Glu Ser Pro Val Lys Ser Phe Val Ser Ile Ser Glu Ala
        675                 680                 685
```

Thr Asp Cys Leu Val Asp Phe Lys Lys Gln Val Thr Val Gln Pro Gly
690 695 700

Ser Arg Thr Arg Thr Lys Ala Gly Arg Gly Arg Arg Arg Lys Phe
705 710 715

<210> 9
<211> 415
<212> PRT
<213> Homo sapiens

<400> 9

Met Ser Pro Glu Val Ala Leu Asn Arg Ile Ser Pro Met Leu Ser Pro
1 5 10 15

Phe Ile Ser Ser Val Val Arg Asn Gly Lys Val Gly Leu Asp Ala Thr
20 25 30

Asn Cys Leu Arg Ile Thr Asp Leu Lys Ser Gly Cys Thr Ser Leu Thr
35 40 45

Pro Gly Pro Asn Cys Asp Arg Phe Lys Leu His Ile Pro Tyr Ala Gly
50 55 60

Glu Thr Leu Lys Trp Asp Ile Ile Phe Asn Ala Gln Tyr Pro Glu Leu
65 70 75 80

Pro Pro Asp Phe Ile Phe Gly Glu Asp Ala Glu Phe Leu Pro Asp Pro
85 90 95

Ser Ala Leu Gln Asn Leu Ala Ser Trp Asn Pro Ser Asn Pro Glu Cys
100 105 110

Leu Leu Leu Val Val Lys Glu Leu Val Gln Gln Tyr His Gln Phe Gln
115 120 125

Cys Ser Arg Leu Arg Glu Ser Ser Arg Leu Met Phe Glu Tyr Gln Thr
130 135 140

Leu Leu Glu Glu Pro Gln Tyr Gly Glu Asn Met Glu Ile Tyr Ala Gly
145 150 155 160

Lys Lys Asn Asn Trp Thr Gly Glu Phe Ser Ala Arg Phe Leu Leu Lys
165 170 175

```
Leu Pro Val Asp Phe Ser Asn Ile Pro Thr Tyr Leu Leu Lys Asp Val
            180                 185                 190

Asn Glu Asp Pro Gly Glu Asp Val Ala Leu Leu Ser Val Ser Phe Glu
        195                 200                 205

Asp Thr Glu Ala Thr Gln Val Tyr Pro Lys Leu Tyr Leu Ser Pro Arg
    210                 215                 220

Ile Glu His Ala Leu Gly Gly Ser Ser Ala Leu His Ile Pro Ala Phe
225                 230                 235                 240

Pro Gly Gly Gly Cys Leu Ile Asp Tyr Val Pro Gln Val Cys His Leu
                245                 250                 255

Leu Thr Asn Lys Val Gln Tyr Val Ile Gln Gly Tyr His Lys Arg Arg
            260                 265                 270

Glu Tyr Ile Ala Ala Phe Leu Ser His Phe Gly Thr Gly Val Val Glu
        275                 280                 285

Tyr Asp Ala Glu Gly Phe Thr Lys Leu Thr Leu Leu Leu Met Trp Lys
    290                 295                 300

Asp Phe Cys Phe Leu Val His Ile Asp Leu Pro Leu Phe Phe Pro Arg
305                 310                 315                 320

Asp Gln Pro Thr Leu Thr Phe Gln Ser Val Tyr His Phe Thr Asn Ser
                325                 330                 335

Gly Gln Leu Tyr Ser Gln Ala Gln Lys Asn Tyr Pro Tyr Ser Pro Arg
            340                 345                 350

Trp Asp Gly Asn Glu Met Ala Lys Arg Ala Lys Gly Cys Gln Gly Ser
        355                 360                 365

Arg Asp Ala Cys Ser Pro Trp Glu Gln Val Leu Ala Phe Ala Val Ala
    370                 375                 380

Lys Thr Gly Cys Lys Leu Leu Gln Pro Gln Arg Asn Trp Pro Ser Ser
385                 390                 395                 400

Arg Gly Pro Pro Trp Arg Ala Ser Glu Gly Glu Arg Thr Ala Gln
                405                 410                 415
```

<210> 10
<211> 316
<212> PRT
<213> Homo sapiens

<400> 10

Met Ala Val Gln Val Val Gln Ala Val Gln Ala Val His Leu Glu Ser
1 5 10 15

Asp Ala Phe Leu Val Cys Leu Asn His Ala Leu Ser Thr Glu Lys Glu
20 25 30

Glu Val Met Gly Leu Cys Ile Gly Glu Leu Asn Asp Asp Thr Arg Ser
35 40 45

Asp Ser Lys Phe Ala Tyr Thr Gly Thr Glu Met Arg Thr Val Ala Glu
50 55 60

Lys Val Asp Ala Val Arg Ile Val His Ile His Ser Val Ile Ile Leu
65 70 75 80

Arg Arg Ser Asp Lys Arg Lys Asp Arg Val Glu Ile Ser Pro Glu Gln
85 90 95

Leu Ser Ala Ala Ser Thr Glu Ala Glu Arg Leu Ala Glu Leu Thr Gly
100 105 110

Arg Pro Met Arg Val Val Gly Trp Tyr His Ser His Pro His Ile Thr
115 120 125

Val Trp Pro Ser His Val Asp Val Arg Thr Gln Ala Met Tyr Gln Met
130 135 140

Met Asp Gln Gly Phe Val Gly Leu Ile Phe Ser Cys Phe Ile Glu Asp
145 150 155 160

Lys Asn Thr Lys Thr Gly Arg Val Leu Tyr Thr Cys Phe Gln Ser Ile
165 170 175

Gln Ala Gln Lys Ser Ser Glu Ser Leu His Gly Pro Arg Asp Phe Trp
180 185 190

Ser Ser Ser Gln His Ile Ser Ile Glu Gly Gln Lys Glu Glu Glu Arg
195 200 205

```
Tyr Glu Arg Ile Glu Ile Pro Ile His Ile Val Pro His Val Thr Ile
    210                 215                 220

Gly Lys Val Cys Leu Glu Ser Ala Val Glu Leu Pro Lys Ile Leu Cys
225                 230                 235                 240

Gln Glu Glu Gln Asp Ala Tyr Arg Arg Ile His Ser Leu Thr His Leu
                245                 250                 255

Asp Ser Val Thr Lys Ile His Asn Gly Ser Val Phe Thr Lys Asn Leu
            260                 265                 270

Cys Ser Gln Met Ser Ala Val Ser Gly Pro Leu Leu Gln Trp Leu Glu
        275                 280                 285

Asp Arg Leu Glu Gln Asn Gln Gln His Leu Gln Glu Leu Gln Gln Glu
    290                 295                 300

Lys Glu Glu Leu Met Gln Glu Leu Ser Ser Leu Glu
305                 310                 315
```

<210> 11
<211> 777
<212> PRT
<213> Homo sapiens

<400> 11

```
Met Pro Asp Asn Arg Gln Pro Arg Asn Arg Gln Pro Arg Ile Arg Ser
1               5                   10                  15

Gly Asn Glu Pro Arg Ser Ala Pro Ala Met Glu Pro Asp Gly Arg Gly
            20                  25                  30

Ala Trp Ala His Ser Arg Ala Ala Leu Asp Arg Leu Glu Lys Leu Leu
        35                  40                  45

Arg Cys Ser Arg Cys Thr Asn Ile Leu Arg Glu Pro Val Cys Leu Gly
    50                  55                  60

Gly Cys Glu His Ile Phe Cys Ser Asn Cys Val Ser Asp Cys Ile Gly
65                  70                  75                  80

Thr Gly Cys Pro Val Cys Tyr Thr Pro Ala Trp Ile Gln Asp Leu Lys
                85                  90                  95
```

```
Ile Asn Arg Gln Leu Asp Ser Met Ile Gln Leu Cys Ser Lys Leu Arg
            100                 105                 110

Asn Leu Leu His Asp Asn Glu Leu Ser Asp Leu Lys Glu Asp Lys Pro
        115                 120                 125

Arg Lys Ser Leu Phe Asn Asp Ala Gly Asn Lys Lys Asn Ser Ile Lys
    130                 135                 140

Met Trp Phe Ser Pro Arg Ser Lys Lys Val Arg Tyr Val Val Ser Lys
145                 150                 155                 160

Ala Ser Val Gln Thr Gln Pro Ala Ile Lys Lys Asp Ala Ser Ala Gln
                165                 170                 175

Gln Asp Ser Tyr Glu Phe Val Ser Pro Ser Pro Pro Ala Asp Val Ser
            180                 185                 190

Glu Arg Ala Lys Lys Ala Ser Ala Arg Ser Gly Lys Lys Gln Lys Lys
        195                 200                 205

Lys Thr Leu Ala Glu Ile Asn Gln Lys Trp Asn Leu Glu Ala Glu Lys
    210                 215                 220

Glu Asp Gly Glu Phe Asp Ser Lys Glu Glu Ser Lys Gln Lys Leu Val
225                 230                 235                 240

Ser Phe Cys Ser Gln Pro Ser Val Ile Ser Ser Pro Gln Ile Asn Gly
                245                 250                 255

Glu Ile Asp Leu Leu Ala Ser Gly Ser Leu Thr Glu Ser Glu Cys Phe
            260                 265                 270

Gly Ser Leu Thr Glu Val Ser Leu Pro Leu Ala Glu Gln Ile Glu Ser
        275                 280                 285

Pro Asp Thr Lys Ser Arg Asn Glu Val Val Thr Pro Glu Lys Val Cys
    290                 295                 300

Lys Asn Tyr Leu Thr Ser Lys Lys Ser Leu Pro Leu Glu Asn Asn Gly
305                 310                 315                 320

Lys Arg Gly His His Asn Arg Leu Ser Ser Pro Ile Ser Lys Arg Cys
                325                 330                 335
```

```
Arg Thr Ser Ile Leu Ser Thr Ser Gly Asp Phe Val Lys Gln Thr Val
            340                 345                 350

Pro Ser Glu Asn Ile Pro Leu Pro Glu Cys Ser Ser Pro Pro Ser Cys
        355                 360                 365

Lys Arg Lys Val Gly Gly Thr Ser Gly Arg Lys Asn Ser Asn Met Ser
    370                 375                 380

Asp Glu Phe Ile Ser Leu Ser Pro Gly Thr Pro Pro Ser Thr Leu Ser
385                 390                 395                 400

Ser Ser Ser Tyr Arg Gln Val Met Ser Ser Pro Ser Ala Met Lys Leu
                405                 410                 415

Leu Pro Asn Met Ala Val Lys Arg Asn His Arg Gly Glu Thr Leu Leu
            420                 425                 430

His Ile Ala Ser Ile Lys Gly Asp Ile Pro Ser Val Glu Tyr Leu Leu
        435                 440                 445

Gln Asn Gly Ser Asp Pro Asn Val Lys Asp His Ala Gly Trp Thr Pro
    450                 455                 460

Leu His Glu Ala Cys Asn His Gly His Leu Lys Val Val Glu Leu Leu
465                 470                 475                 480

Leu Gln His Lys Ala Leu Val Asn Thr Thr Gly Tyr Gln Asn Asp Ser
                485                 490                 495

Pro Leu His Asp Ala Ala Lys Asn Gly His Val Asp Ile Val Lys Leu
            500                 505                 510

Leu Leu Ser Tyr Gly Ala Ser Arg Asn Ala Val Asn Ile Phe Gly Leu
        515                 520                 525

Arg Pro Val Asp Tyr Thr Asp Asp Glu Ser Met Lys Ser Leu Leu Leu
    530                 535                 540

Leu Pro Glu Lys Asn Glu Ser Ser Ser Ala Ser His Cys Ser Val Met
545                 550                 555                 560

Asn Thr Gly Gln Arg Arg Asp Gly Pro Leu Val Leu Ile Gly Ser Gly
```

565 570 575

Leu Ser Ser Glu Gln Gln Lys Met Leu Ser Glu Leu Ala Val Ile Leu
580 585 590

Lys Ala Lys Lys Tyr Thr Glu Phe Asp Ser Thr Val Thr His Val Val
595 600 605

Val Pro Gly Asp Ala Val Gln Ser Thr Leu Lys Cys Met Leu Gly Ile
610 615 620

Leu Asn Gly Cys Trp Ile Leu Lys Phe Glu Trp Val Lys Ala Cys Leu
625 630 635 640

Arg Arg Lys Val Cys Glu Gln Glu Glu Lys Tyr Glu Ile Pro Glu Gly
645 650 655

Pro Arg Arg Ser Arg Leu Asn Arg Glu Gln Leu Leu Pro Lys Leu Phe
660 665 670

Asp Gly Cys Tyr Phe Tyr Leu Trp Gly Thr Phe Lys His His Pro Lys
675 680 685

Asp Asn Leu Ile Lys Leu Val Thr Ala Gly Gly Gly Gln Ile Leu Ser
690 695 700

Arg Lys Pro Lys Pro Asp Ser Asp Val Thr Gln Thr Ile Asn Thr Val
705 710 715 720

Ala Tyr His Ala Arg Pro Asp Ser Asp Gln Arg Phe Cys Thr Gln Tyr
725 730 735

Ile Ile Tyr Glu Asp Leu Cys Asn Tyr His Pro Glu Arg Val Arg Gln
740 745 750

Gly Lys Val Trp Lys Ala Pro Ser Ser Trp Phe Ile Asp Cys Val Met
755 760 765

Ser Phe Glu Leu Leu Pro Leu Asp Ser
770 775

<210> 12
<211> 10987
<212> DNA
<213> Homo sapiens

<400> 12

ggtggcgcga gcttctgaaa ctaggcggca gaggcggagc cgctgtggca ctgctgcgcc 60

tctgctgcgc ctcgggtgtc ttttgcggcg gtgggtcgcc gccgggagaa gcgtgagggg 120

acagatttgt gaccggcgcg gtttttgtca gcttactccg gccaaaaaag aactgcacct 180

ctggagcgga cttatttacc aagcattgga ggaatatcgt aggtaaaaat gcctattgga 240

tccaaagaga ggccaacatt ttttgaaatt tttaagacac gctgcaacaa agcagattta 300

ggaccaataa gtcttaattg gtttgaagaa ctttcttcag aagctccacc ctataattct 360

gaacctgcag aagaatctga acataaaaac aacaattacg aaccaaacct atttaaaact 420

ccacaaagga aaccatctta taatcagctg gcttcaactc caataatatt caaagagcaa 480

gggctgactc tgccgctgta ccaatctcct gtaaaagaat tagataaatt caaattagac 540

ttaggaagga atgttcccaa tagtagacat aaaagtcttc gcacagtgaa aactaaaatg 600

gatcaagcag atgatgtttc ctgtccactt ctaaattctt gtcttagtga aagtcctgtt 660

gttctacaat gtacacatgt aacaccacaa agagataagt cagtggtatg tgggagtttg 720

tttcatacac caaagtttgt gaagggtcgt cagacaccaa aacatatttc tgaaagtcta 780

ggagctgagg tggatcctga tatgtcttgg tcaagttctt tagctacacc acccaccctt 840

agttctactg tgctcatagt cagaaatgaa gaagcatctg aaactgtatt tcctcatgat 900

actactgcta atgtgaaaag ctatttttcc aatcatgatg aaagtctgaa gaaaaatgat 960

agatttatcg cttctgtgac agacagtgaa aacacaaatc aaagagaagc tgcaagtcat 1020

ggatttggaa aaacatcagg gaattcattt aaagtaaata gctgcaaaga ccacattgga 1080

aagtcaatgc caaatgtcct agaagatgaa gtatatgaaa cagttgtaga tacctctgaa 1140

gaagatagtt tttcattatg tttttctaaa tgtagaacaa aaaatctaca aaaagtaaga 1200

actagcaaga ctaggaaaaa aattttccat gaagcaaacg ctgatgaatg tgaaaaatct 1260

aaaaaccaag tgaaagaaaa atactcattt gtatctgaag tggaaccaaa tgatactgat 1320

ccattagatt caaatgtagc acatcagaag ccctttgaga gtggaagtga caaaatctcc 1380

aaggaagttg taccgtcttt ggcctgtgaa tggtctcaac taacccttc aggtctaaat 1440

ggagcccaga tggagaaaat acccctattg catatttctt catgtgacca aaatatttca 1500

gaaaaagacc tattagacac agagaacaaa agaaagaaag attttcttac ttcagagaat 1560

tctttgccac gtatttctag cctaccaaaa tcagagaagc cattaaatga ggaaacagtg 1620

gtaaataaga gagatgaaga gcagcatctt gaatctcata cagactgcat tcttgcagta 1680

aagcaggcaa tatctggaac ttctccagtg gcttcttcat ttcagggtat caaaaagtct 1740

atattcagaa taagagaatc acctaaagag actttcaatg caagtttttc aggtcatatg 1800

actgatccaa actttaaaaa agaaactgaa gcctctgaaa gtggactgga aatacatact 1860

gtttgctcac agaaggagga ctccttatgt ccaaatttaa ttgataatgg aagctggcca 1920

gccaccacca cacagaattc tgtagctttg aagaatgcag gtttaatatc cactttgaaa 1980

aagaaaacaa ataagtttat ttatgctata catgatgaaa cattttataa aggaaaaaaa 2040

ataccgaaag accaaaaatc agaactaatt aactgttcag cccagtttga agcaaatgct 2100

tttgaagcac cacttacatt tgcaaatgct gattcaggtt tattgcattc ttctgtgaaa 2160

agaagctgtt cacagaatga ttctgaagaa ccaactttgt ccttaactag ctcttttggg 2220

acaattctga ggaaatgttc tagaaatgaa acatgttcta ataatacagt aatctctcag 2280

gatcttgatt ataaagaagc aaaatgtaat aaggaaaaac tacagttatt tattacccca 2340

gaagctgatt ctctgtcatg cctgcaggaa ggacagtgtg aaaatgatcc aaaaagcaaa 2400

aaagtttcag atataaaaga agaggtcttg gctgcagcat gtcacccagt acaacattca 2460

aaagtggaat acagtgatac tgactttcaa tcccagaaaa gtcttttata tgatcatgaa 2520

aatgccagca ctcttatttt aactcctact tccaaggatg ttctgtcaaa cctagtcatg 2580

atttctagag gcaaagaatc atacaaaatg tcagacaagc tcaaaggtaa caattatgaa 2640

tctgatgttg aattaaccaa aaatattccc atggaaaaga atcaagatgt atgtgcttta 2700

aatgaaaatt ataaaaacgt tgagctgttg ccacctgaaa aatacatgag agtagcatca 2760

ccttcaagaa aggtacaatt caaccaaaac acaaatctaa gagtaatcca aaaaaatcaa 2820

gaagaaacta cttcaatttc aaaaataact gtcaatccag actctgaaga acttttctca 2880

gacaatgaga ataattttgt cttccaagta gctaatgaaa ggaataatct tgctttagga 2940

aatactaagg aacttcatga aacagacttg acttgtgtaa acgaacccat tttcaagaac 3000

tctaccatgg ttttatatgg agacacaggt gataaacaag caacccaagt gtcaattaaa 3060

aaagatttgg tttatgttct tgcagaggag aacaaaaata gtgtaaagca gcatataaaa 3120

atgactctag gtcaagattt aaaatcggac atctccttga atatagataa aataccagaa 3180

aaaaataatg attacatgaa caaatgggca ggactcttag gtccaatttc aaatcacagt 3240

tttggaggta gcttcagaac agcttcaaat aaggaaatca agctctctga acataacatt 3300

aagaagagca aaatgttctt caaagatatt gaagaacaat atcctactag tttagcttgt 3360

gttgaaattg taaatacctt ggcattagat aatcaaaaga aactgagcaa gcctcagtca 3420

attaatactg tatctgcaca tttacagagt agtgtagttg tttctgattg taaaaatagt 3480

catataaccc ctcagatgtt attttccaag caggatttta attcaaacca taatttaaca 3540

cctagccaaa aggcagaaat tacagaactt tctactatat tagaagaatc aggaagtcag 3600

tttgaattta ctcagtttag aaaaccaagc tacatattgc agaagagtac atttgaagtg 3660

cctgaaaacc agatgactat cttaaagacc acttctgagg aatgcagaga tgctgatctt 3720

catgtcataa tgaatgcccc atcgattggt caggtagaca gcagcaagca atttgaaggt 3780

acagttgaaa ttaaacggaa gtttgctggc ctgttgaaaa atgactgtaa caaaagtgct 3840

tctggttatt taacagatga aaatgaagtg gggtttaggg gcttttattc tgctcatggc 3900

acaaaactga atgtttctac tgaagctctg caaaaagctg tgaaactgtt tagtgatatt 3960

gagaatatta gtgaggaaac ttctgcagag gtacatccaa taagtttatc ttcaagtaaa 4020

tgtcatgatt ctgttgtttc aatgtttaag atagaaaatc ataatgataa aactgtaagt 4080

gaaaaaaata ataaatgcca actgatatta caaaataata ttgaaatgac tactggcact 4140

tttgttgaag aaattactga aaattacaag agaaatactg aaaatgaaga taacaaatat 4200

actgctgcca gtagaaattc tcataactta gaatttgatg gcagtgattc aagtaaaaat 4260

gatactgttt gtattcataa agatgaaacg gacttgctat ttactgatca gcacaacata 4320

tgtcttaaat tatctggcca gtttatgaag gagggaaaca ctcagattaa agaagatttg 4380

tcagatttaa ctttttgga agttgcgaaa gctcaagaag catgtcatgg taatacttca 4440

aataaagaac agttaactgc tactaaaacg gagcaaaata taaaagattt tgagacttct 4500

gatacatttt ttcagactgc aagtgggaaa aatattagtg tcgccaaaga gtcatttaat 4560

aaaattgtaa atttctttga tcagaaacca gaagaattgc ataacttttc cttaaattct 4620

gaattacatt ctgacataag aaagaacaaa atggacattc taagttatga ggaaacagac 4680

atagttaaac acaaaatact gaaagaaagt gtcccagttg gtactggaaa tcaactagtg 4740

accttccagg gacaacccga acgtgatgaa aagatcaaag aacctactct gttgggtttt 4800

catacagcta gcgggaaaaa agttaaaatt gcaaaggaat ctttggacaa agtgaaaaac 4860

ctttttgatg aaaaagagca aggtactagt gaaatcacca gttttagcca tcaatgggca 4920

aagaccctaa agtacagaga ggcctgtaaa gaccttgaat tagcatgtga gaccattgag 4980

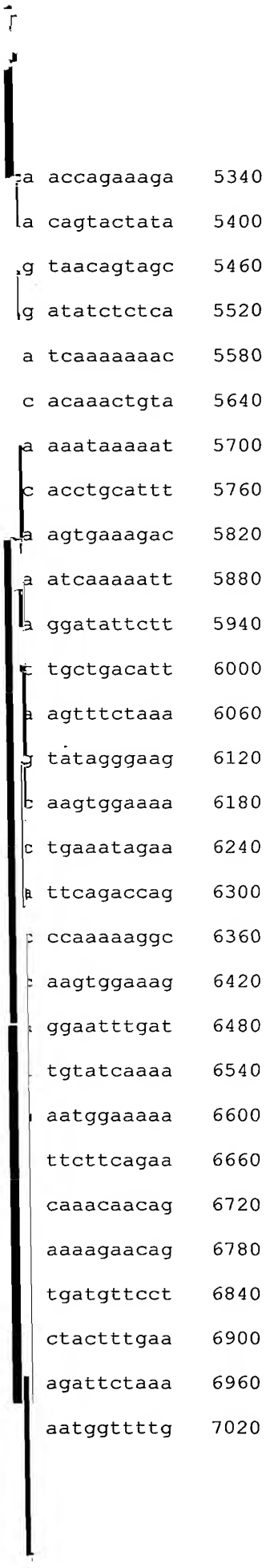
atcacagctg ccccaaagtg taaagaaatg cagaattctc tcaataatga taaaaacctt 5040

gtttctattg agactgtggt gccacctaag ctcttaagtg ataatttatg tagacaaact 5100

gaaaatctca aaacatcaaa aagtatcttt ttgaaagtta aagtacatga aaatgtagaa 5160

aaagaaacag caaaaagtcc tgcaacttgt tacacaaatc agtcccctta ttcagtcatt 5220

gaaaattcag ccttagcttt ttacacaagt tgtagtagaa aaacttctgt gagtcagact 5280


a accagaaaga 5340
a cagtactata 5400
g taacagtagc 5460
g atatctctca 5520
a tcaaaaaaac 5580
c acaaactgta 5640
a aaataaaaat 5700
c acctgcattt 5760
a agtgaaagac 5820
a atcaaaaatt 5880
a ggatattctt 5940
t tgctgacatt 6000
a agtttctaaa 6060
g tatagggaag 6120
t aagtggaaaa 6180
c tgaaatagaa 6240
a ttcagaccag 6300
c ccaaaaaggc 6360
aagtggaaag 6420
ggaatttgat 6480
tgtatcaaaa 6540
aatggaaaaa 6600
ttcttcagaa 6660
caaacaacag 6720
aaaagaacag 6780
tgatgttcct 6840
ctactttgaa 6900
agattctaaa 6960
aatggttttg 7020

tcaaattcaa gaattggaaa aagaagagga gagcccctta tcttagtggg agaaccctca 7080

atcaaaagaa acttattaaa tgaatttgac aggataatag aaaatcaaga aaaatcctta 7140

aaggcttcaa aaagcactcc agatggcaca ataaaagatc gaagattgtt tatgcatcat 7200

gtttctttag agccgattac ctgtgtaccc tttcgcacaa ctaaggaacg tcaagagata 7260

cagaatccaa attttaccgc acctggtcaa gaatttctgt ctaaatctca tttgtatgaa 7320

catctgactt tggaaaaatc ttcaagcaat ttagcagttt caggacatcc attttatcaa 7380

gtttctgcta caagaaatga aaaaatgaga cacttgatta ctacaggcag accaaccaaa 7440

gtctttgttc cacctttttaa aactaaatca cattttcaca gagttgaaca gtgtgttagg 7500

aatattaact tggaggaaaa cagacaaaag caaaacattg atggacatgg ctctgatgat 7560

agtaaaaata agattaatga caatgagatt catcagttta acaaaaacaa ctccaatcaa 7620

gcagcagctg taactttcac aaagtgtgaa gaagaacctt tagatttaat tacaagtctt 7680

cagaatgcca gagatataca ggatatgcga attaagaaga aacaaaggca acgcgtcttt 7740

ccacagccag gcagtctgta tcttgcaaaa acatccactc tgcctcgaat ctctctgaaa 7800

gcagcagtag gaggccaagt tccctctgcg tgttctcata aacagctgta tacgtatggc 7860

gtttctaaac attgcataaa aattaacagc aaaaatgcag agtcttttca gtttcacact 7920

gaagattatt ttggtaagga aagtttatgg actggaaaag gaatacagtt ggctgatggt 7980

ggatggctca taccctccaa tgatggaaag gctggaaaag aagaatttta tagggctctg 8040

tgtgacactc caggtgtgga tccaaagctt atttctagaa tttgggttta taatcactat 8100

agatggatca tatggaaact ggcagctatg gaatgtgcct ttcctaagga atttgctaat 8160

agatgcctaa gcccagaaag ggtgcttctt caactaaaat acagatatga tacggaaatt 8220

gatagaagca gaagatcggc tataaaaaag ataatggaaa gggatgacac agctgcaaaa 8280

acacttgttc tctgtgtttc tgacataatt tcattgagcg caaatatatc tgaaacttct 8340

agcaataaaa ctagtagtgc agatacccaa aaagtggcca ttattgaact tacagatggg 8400

tggtatgctg ttaaggccca gttagatcct cccctcttag ctgtcttaaa gaatggcaga 8460

ctgacagttg gtcagaagat tattcttcat ggagcagaac tggtgggctc tcctgatgcc 8520

tgtacacctc ttgaagcccc agaatctctt atgttaaaga tttctgctaa cagtactcgg 8580

cctgctcgct ggtataccaa acttggattc tttcctgacc ctagaccttt tcctctgccc 8640

ttatcatcgc ttttcagtga tggaggaaat gttggttgtg ttgatgtaat tattcaaaga 8700

gcatacccta tacagtggat ggagaagaca tcatctggat tatacatatt tcgcaatgaa 8760

agagaggaag aaaaggaagc agcaaaatat gtggaggccc aacaaaagag actagaagcc 8820

ttattcacta aaattcagga ggaatttgaa gaacatgaag aaaacacaac aaaaccatat 8880

ttaccatcac gtgcactaac aagacagcaa gttcgtgctt tgcaagatgg tgcagagctt 8940

tatgaagcag tgaagaatgc agcagaccca gcttaccttg agggttattt cagtgaagag 9000

cagttaagag ccttgaataa tcacaggcaa atgttgaatg ataagaaaca agctcagatc 9060

cagttggaaa ttaggaaggc catggaatct gctgaacaaa aggaacaagg tttatcaagg 9120

gatgtcacaa ccgtgtggaa gttgcgtatt gtaagctatt caaaaaaaga aaaagattca 9180

gttatactga gtatttggcg tccatcatca gatttatatt ctctgttaac agaaggaaag 9240

agatacagaa tttatcatct tgcaacttca aaatctaaaa gtaaatctga aagagctaac 9300

atacagttag cagcgacaaa aaaaactcag tatcaacaac taccggtttc agatgaaatt 9360

ttatttcaga tttaccagcc acgggagccc cttcacttca gcaaattttt agatccagac 9420

tttcagccat cttgttctga ggtggaccta ataggatttg tcgtttctgt tgtgaaaaaa 9480

acaggacttg ccccctttcgt ctatttgtca gacgaatgtt acaatttact ggcaataaag 9540

ttttggatag accttaatga ggacattatt aagcctcata tgttaattgc tgcaagcaac 9600

ctccagtggc gaccagaatc caaatcaggc cttcttactt tatttgctgg agatttttct 9660

gtgttttctg ctagtccaaa agagggccac tttcaagaga cattcaacaa aatgaaaaat 9720

actgttgaga atattgacat actttgcaat gaagcagaaa acaagcttat gcatatactg 9780

catgcaaatg atcccaagtg gtccacccca actaaagact gtacttcagg gccgtacact 9840

gctcaaatca ttcctggtac aggaaacaag cttctgatgt cttctcctaa ttgtgagata 9900

tattatcaaa gtccttttatc actttgtatg gccaaaagga agtctgtttc cacacctgtc 9960

tcagcccaga tgacttcaaa gtcttgtaaa ggggagaaag agattgatga ccaaaagaac 10020

tgcaaaaaga gaagagcctt ggatttcttg agtagactgc ctttacctcc acctgttagt 10080

cccatttgta catttgtttc tccggctgca cagaaggcat ttcagccacc aaggagttgt 10140

ggcaccaaat acgaaacacc cataaagaaa aaagaactga attctcctca gatgactcca 10200

tttaaaaaat tcaatgaaat ttctcttttg gaaagtaatt caatagctga cgaagaactt 10260

gcattgataa atacccaagc tcttttgtct ggttcaacag gagaaaaaca atttatatct 10320

gtcagtgaat ccactaggac tgctcccacc agttcagaag attatctcag actgaaacga 10380

cgttgtacta catctctgat caaagaacag gagagttccc aggccagtac ggaagaatgt 10440

gagaaaaata agcaggacac aattacaact aaaaaatata tctaagcatt tgcaaaggcg 10500

acaataaatt attgacgctt aacctttcca gtttataaga ctggaatata atttcaaacc 10560

acacattagt acttatgttg cacaatgaga aaagaaatta gtttcaaatt tacctcagcg 10620

tttgtgtatc gggcaaaaat cgttttgccc gattccgtat tggtatactt ttgcttcagt 10680

tgcatatctt aaaactaaat gtaatttatt aactaatcaa gaaaaacatc tttggctgag 10740

ctcggtggct catgcctgta atcccaacac tttgagaagc tgaggtggga ggagtgcttg 10800

aggccaggag ttcaagacca gcctgggcaa catagggaga cccccatctt tacgaagaaa 10860

aaaaaaaagg ggaaaagaaa atcttttaaa tctttggatt tgatcactac aagtattatt 10920

ttacaatcaa caaaatggtc atccaaactc aaacttgaga aaatatcttg ctttcaaatt 10980

gacacta 10987

<210> 13
<211> 5711
<212> DNA
<213> Homo sapiens

<400> 13
agctcgctga gacttcctgg accccgcacc aggctgtggg gtttctcaga taactgggcc 60

cctgcgctca ggaggccttc accctctgct ctgggtaaag ttcattggaa cagaaagaaa 120

tggatttatc tgctcttcgc gttgaagaag tacaaaatgt cattaatgct atgcagaaaa 180

tcttagagtg tcccatctgt ctggagttga tcaaggaacc tgtctccaca aagtgtgacc 240

acatattttg caaattttgc atgctgaaac ttctcaacca gaagaaaggg ccttcacagt 300

gtcctttatg taagaatgat ataaccaaaa ggagcctaca agaaagtacg agatttagtc 360

aacttgttga agagctattg aaaatcattt gtgcttttca gcttgacaca ggtttggagt 420

atgcaaacag ctataatttt gcaaaaaagg aaaataactc tcctgaacat ctaaaagatg 480

aagtttctat catccaaagt atgggctaca gaaaccgtgc caaaagactt ctacagagtg 540

aacccgaaaa tccttccttg caggaaacca gtctcagtgt ccaactctct aaccttggaa 600

ctgtgagaac tctgaggaca aagcagcgga tacaacctca aaagacgtct gtctacattg 660

aattgggatc tgattcttct gaagataccg ttaataaggc aacttattgc agtgtgggag 720

atcaagaatt gttacaaatc acccctcaag gaaccaggga tgaaatcagt ttggattctg 780

caaaaaaggc tgcttgtgaa ttttctgaga cggatgtaac aaatactgaa catcatcaac 840

ccagtaataa tgatttgaac accactgaga agcgtgcagc tgagaggcat ccagaaaagt 900

atcagggtag ttctgtttca aacttgcatg tggagccatg tggcacaaat actcatgcca 960

gctcattaca gcatgagaac agcagtttat tactcactaa agacagaatg aatgtagaaa 1020

aggctgaatt ctgtaataaa agcaaacagc ctggcttagc aaggagccaa cataacagat 1080

gggctggaag taaggaaaca tgtaatgata ggcggactcc cagcacagaa aaaaaggtag 1140

atctgaatgc tgatcccctg tgtgagagaa aagaatggaa taagcagaaa ctgccatgct 1200

cagagaatcc tagagatact gaagatgttc cttggataac actaaatagc agcattcaga 1260

aagttaatga gtggttttcc agaagtgatg aactgttagg ttctgatgac tcacatgatg 1320

gggagtctga atcaaatgcc aaagtagctg atgtattgga cgttctaaat gaggtagatg 1380

aatattctgg ttcttcagag aaaatagact tactggccag tgatcctcat gaggctttaa 1440

tatgtaaaag tgaaagagtt cactccaaat cagtagagag taatattgaa gacaaaatat 1500

ttgggaaaac ctatcggaag aaggcaagcc tccccaactt aagccatgta actgaaaatc 1560

taattatagg agcatttgtt actgagccac agataataca agagcgtccc ctcacaaata 1620

aattaaagcg taaaaggaga cctacatcag gccttcatcc tgaggatttt atcaagaaag 1680

cagatttggc agttcaaaag actcctgaaa tgataaatca gggaactaac caaacggagc 1740

agaatggtca agtgatgaat attactaata gtggtcatga gaataaaaca aaaggtgatt 1800

ctattcagaa tgagaaaaat cctaacccaa tagaatcact cgaaaaagaa tctgctttca 1860

aaacgaaagc tgaacctata agcagcagta taagcaatat ggaactcgaa ttaaatatcc 1920

acaattcaaa agcacctaaa aagaataggc tgaggaggaa gtcttctacc aggcatattc 1980

atgcgcttga actagtagtc agtagaaatc taagcccacc taattgtact gaattgcaaa 2040

ttgatagttg ttctagcagt gaagagataa agaaaaaaaa gtacaaccaa atgccagtca 2100

ggcacagcag aaacctacaa ctcatggaag gtaaagaacc tgcaactgga gccaagaaga 2160

gtaacaagcc aaatgaacag acaagtaaaa gacatgacag cgatactttc ccagagctga 2220

agttaacaaa tgcacctggt tcttttacta agtgttcaaa taccagtgaa cttaaagaat 2280

ttgtcaatcc tagccttcca agagaagaaa aagaagagaa actagaaaca gttaaagtgt 2340

ctaataatgc tgaagacccc aaagatctca tgttaagtgg agaaagggtt ttgcaaactg 2400

aaagatctgt agagagtagc agtatttcat tggtacctgg tactgattat ggcactcagg 2460

aaagtatctc gttactggaa gttagcactc tagggaaggc aaaaacagaa ccaaataaat 2520

gtgtgagtca gtgtgcagca tttgaaaacc ccaagggact aattcatggt tgttccaaag 2580

ataatagaaa tgacacagaa ggctttaagt atccattggg acatgaagtt aaccacagtc 2640

gggaaacaag catagaaatg gaagaaagtg aacttgatgc tcagtatttg cagaatacat 2700

tcaaggtttc aaagcgccag tcatttgctc cgttttcaaa tccaggaaat gcagaagagg 2760

aatgtgcaac attctctgcc cactctgggt ccttaaagaa acaaagtcca aaagtcactt 2820

ttgaatgtga acaaaaggaa gaaaatcaag gaaagaatga gtctaatatc aagcctgtac 2880

agacagttaa tatcactgca ggctttcctg tggttggtca gaaagataag ccagttgata 2940

atgccaaatg tagtatcaaa ggaggctcta ggttttgtct atcatctcag ttcagaggca 3000

acgaaactgg actcattact ccaaataaac atggactttt acaaaaccca tatcgtatac 3060

caccactttt tcccatcaag tcatttgtta aaactaaatg taagaaaaat ctgctagagg 3120

aaaactttga ggaacattca atgtcacctg aaagagaaat gggaaatgag aacattccaa 3180

gtacagtgag cacaattagc cgtaataaca ttagagaaaa tgtttttaaa gaagccagct 3240

caagcaatat taatgaagta ggttccagta ctaatgaagt gggctccagt attaatgaaa 3300

taggttccag tgatgaaaac attcaagcag aactaggtag aaacagaggg ccaaaattga 3360

atgctatgct tagattaggg gttttgcaac ctgaggtcta taaacaaagt cttcctggaa 3420

gtaattgtaa gcatcctgaa ataaaaaagc aagaatatga agaagtagtt cagactgtta 3480

atacagattt ctctccatat ctgatttcag ataacttaga acagcctatg ggaagtagtc 3540

atgcatctca ggtttgttct gagacacctg atgacctgtt agatgatggt gaaataaagg 3600

aagatactag ttttgctgaa aatgacatta aggaaagttc tgctgttttt agcaaaagcg 3660

tccagaaagg agagcttagc aggagtccta gccctttcac ccatacacat ttggctcagg 3720

gttaccgaag aggggccaag aaattagagt cctcagaaga gaacttatct agtgaggatg 3780

aagagcttcc ctgcttccaa cacttgttat ttggtaaagt aaacaatata ccttctcagt 3840

ctactaggca tagcaccgtt gctaccgagt gtctgtctaa gaacacagag gagaatttat 3900

tatcattgaa gaatagctta aatgactgca gtaaccaggt aatattggca aaggcatctc 3960

aggaacatca ccttagtgag gaaacaaaat gttctgctag cttgttttct tcacagtgca 4020

gtgaattgga agacttgact gcaaatacaa acacccagga tcctttcttg attggttctt 4080

ccaaacaaat gaggcatcag tctgaaagcc agggagttgg tctgagtgac aaggaattgg 4140

tttcagatga tgaagaaaga ggaacgggct tggaagaaaa taatcaagaa gagcaaagca 4200

tggattcaaa cttaggtgaa gcagcatctg ggtgtgagag tgaaacaagc gtctctgaag 4260

actgctcagg gctatcctct cagagtgaca ttttaaccac tcagcagagg gataccatgc 4320

aacataacct gataaagctc cagcaggaaa tggctgaact agaagctgtg ttagaacagc 4380

atgggagcca gccttctaac agctaccctt ccatcataag tgactcttct gcccttgagg 4440

acctgcgaaa tccagaacaa agcacatcag aaaaagcagt attaacttca cagaaaagta 4500

gtgaataccc tataagccag aatccagaag gcctttctgc tgacaagttt gaggtgtctg 4560

cagatagttc taccagtaaa aataaagaac caggagtgga aaggtcatcc ccttctaaat 4620

gcccatcatt agatgatagg tggtacatgc acagttgctc tgggagtctt cagaatagaa 4680

actacccatc tcaagaggag ctcattaagg ttgttgatgt ggaggagcaa cagctggaag 4740

agtctgggcc acacgatttg acggaaacat cttacttgcc aaggcaagat ctagagggaa 4800

ccccttacct ggaatctgga atcagcctct tctctgatga ccctgaatct gatccttctg 4860

aagacagagc cccagagtca gctcgtgttg gcaacatacc atcttcaacc tctgcattga 4920

aagttcccca attgaaagtt gcagaatctg cccagagtcc agctgctgct catactactg 4980

atactgctgg gtataatgca atggaagaaa gtgtgagcag ggagaagcca gaattgacag 5040

cttcaacaga aagggtcaac aaaagaatgt ccatggtggt gtctggcctg accccagaag 5100

aatttatgct cgtgtacaag tttgccagaa aacaccacat cactttaact aatctaatta 5160

ctgaagagac tactcatgtt gttatgaaaa cagatgctga gtttgtgtgt gaacggacac 5220

tgaaatattt tctaggaatt gcgggaggaa aatgggtagt tagctatttc tgggtgaccc 5280

agtctattaa agaaagaaaa atgctgaatg agcatgattt tgaagtcaga ggagatgtgg 5340

tcaatggaag aaaccaccaa ggtccaaagc gagcaagaga atcccaggac agaaagatct 5400

tcaggggct agaaatctgt tgctatgggc ccttcaccaa catgcccaca gatcaactgg 5460

aatggatggt acagctgtgt ggtgcttctg tggtgaagga gctttcatca ttcacccttg 5520

gcacaggtgt ccacccaatt gtggttgtgc agccagatgc ctggacagag gacaatggct 5580

tccatgcaat tgggcagatg tgtgaggcac ctgtggtgac ccgagagtgg gtgttggaca 5640

gtgtagcact ctaccagtgc caggagctgg acacctacct gataccccag atcccccaca 5700

gccactactg a 5711

<210> 14
<211> 2229
<212> DNA
<213> Homo sapiens

<400> 14
ccgcgcgcag cggccagaga ccgagcccta aggagagtgc ggcgcttccc gaggcgtgca 60

gctgggaact gcaactcatc tgggttgtgc gcagaaggct ggggcaagcg agtagagaag 120

tggagcgtaa gccaggggcg ttgggggccg tgcgggtcgg gcgcgtgcca cgcccgcggg 180

gtgaagtcgg agcgcggggc ctgctggaga gaggagcgct gcggaccgag taatggcaat 240

gcagatgcag cttgaagcaa atgcagatac ttcagtggaa gaagaaagct ttggcccaca 300

acccatttca cggttagagc agtgtggcat aaatgccaac gatgtgaaga aattggaaga 360

agctggattc catactgtgg aggctgttgc ctatgcgcca aagaaggagc taataaatat 420

taagggaatt agtgaagcca aagctgataa aattctggct gaggcagcta aattagttcc 480

aatgggtttc accactgcaa ctgaattcca ccaaaggcgg tcagagatca tacagattac 540

tactggctcc aaagagcttg acaaactact tcaaggtgga attgagactg gatctatcac 600

agaaatgttt ggagaattcc gaactgggaa gacccagatc tgtcatacgc tagctgtcac 660

ctgccagctt cccattgacc ggggtggagg tgaaggaaag gccatgtaca ttgacactga 720

gggtaccttt aggccagaac ggctgctggc agtggctgag aggtatggtc tctctggcag 780

tgatgtcctg gataatgtag catatgctcg agcgttcaac acagaccacc agacccagct 840

cctttatcaa gcatcagcca tgatggtaga atctaggtat gcactgctta ttgtagacag 900

tgccaccgcc ctttacagaa cagactactc gggtcgaggt gagctttcag ccaggcagat 960

gcacttggcc aggtttctgc ggatgcttct gcgactcgct gatgagtttg gtgtagcagt 1020

ggtaatcact aatcaggtgg tagctcaagt ggatggagca gcgatgtttg ctgctgatcc 1080

caaaaaacct attggaggaa atatcatcgc ccatgcatca acaaccagat tgtatctgag 1140

gaaaggaaga ggggaaacca gaatctgcaa aatctacgac tctccctgtc ttcctgaagc 1200

tgaagctatg ttcgccatta atgcagatgg agtgggagat gccaaagact gaatcattgg 1260

gtttttcctc tgttaaaaac cttaagtgct gcagcctaat gagagtgcac tgctccctgg 1320

ggttctctac aggcctcttc ctgttgtgac tgccaggata aagcttccgg gaaaacagct 1380

attatatcag cttttctgat ggtataaaca ggagacaggt cagtagtcac aaactgatct 1440

aaaatgttta ttccttctgt agtgtattaa tctctgtgtg ttttctttgg ttttggagga 1500

ggggtatgaa gtatctttga catggtgcct taggaatgac ttgggtttaa caagctgtct 1560

actggacaat cttatgtttc caagagaact aaagctggag agacctgacc cttctctcac 1620

ttctaaatta atggtaaaat aaaatgcctc agctatgtag caaagggaat gggtctgcac 1680

agattctttt tttctgtcag taaaactctc aagcaggttt ttaagttgtc tgtctgaatg 1740

atcttgtgta agggtttggt tatggagtct tgtgccaaac ctactaggcc attagccctt 1800

caccatctac ctgcttggtc tttcattgct aagactaact caagataatc ctagagtctt 1860

aaagcatttc aggccagtgt ggtgtcttgc gcctgtactc ccagcacttt gggaggccga 1920

ggcaggtgga tcgcttgagc caggagtttt aagtccagct tggccaagat ggtgaaatcc 1980

catctctaca aaaaatgcag aacttaatct ggacacactg ttacacgtgc ctgtagtccc 2040

agctactcta tagcctgagg tgggagaatc acttaagcct ggaaggtgga agttgcagtg 2100

agtcgagatt gcactgctgc attccagcca gggtgacaga gtgagaccat gtttcaaaca 2160

agaaacattt cagagggcaa gtaaacagat ttgattgtga ggcttctaat aaagtagtta 2220

ttagtagtg 2229

<210> 15
<211> 7840
<212> DNA
<213> Homo sapiens

<400> 15
atgacaactg aattaagttc atatgggtat ttgggatccg agaattctgc tttgttcaat 60

agagtctgca ccagttactg tgaagaagga gtagagtctg ctgccctctt gggatgtgac 120

aatagctcat ctactggaaa taccagtttc tcttcccttc tgagggatta ccctctgcat 180

cttttccata tgaaaacccc atttcctctt tcctttattg aatgcccctc aaaatcagaa 240

cttacatcat taggcattat tctctatttc cttgatgata tggaggatga gattttcaga 300

cactatgcag agctgaggcc acagaatttc ccctgttccg taagaaggaa caacagtgct 360

tttatgacat catctgattt tgcagaacga gcagccggtg tgtaccacag agaagcacgg 420

tctggcaaat acaagctcac ctacgcagaa gctaaggcgg tgtgtgaatt tgaaggcggc 480

catctcgcaa cttacaagca gctagaggca gccagaaaaa ttggatttca tgtctgtgct 540

gctggatgga tggctaaggg cagagttgga taccccattg tgaagccagg gcccaactgt 600

ggatttggaa aaactggcat tattgattat ggaatccgtc tcaataggag tgaaagatgg 660

gatgcctatt gctacaaccc acacgcaaag gagtgtggtg gcgtctttac agatccaaag 720

caaattttta aatctccagg cttcccaaat gagtacgaag ataaccaaat ctgctactgg 780

cacattagac tcaagtatgg tcagcgtatt cacctgagtt ttttagattt tgaccttgaa 840

gatgacccag gttgcttggc tgattatgtt gaaatatatg acagttacga tgatgtccat 900

ggctttgtgg gaagatactg tggagatgag cttccagatg acatcatcag tacaggaaat 960

gtcatgacct tgaagtttct aagtgatgct tcagtgacag ctggaggttt ccaaatcaaa 1020

tatgttgcaa tggatcctgt atccaaatcc agtcaaggaa aaaatacaaa agtcagaatg 1080

caacgagatc tggttgatac tgcacagaga tcagctccag ggcccagtgc aaggagaagg 1140

gtggccgaca tgacggccag gggtcagagc cccctcgcgc cgctgttgga gactttggaa 1200

gacccttctg cctcccatgg agggcagact gacgcttacc tgactctgac cagtcgtatg 1260

actggagaag aaggaaaaga agtaattaca gaaattgaga aaaaacttcc tcggctgtac 1320

aaagttttaa aggtatccag tataattgat tcattagaaa tactgtttaa caaaggagag 1380

acgcattctg ctgttgttga ttttgaagca ttaaatgtta tcgtaaggct aattgaacaa 1440

gccccaattc aaatgggaga agaggcagtg aggtgggcaa aactggtcat acctttagtg 1500

gttcattcag cacaaaaggt acatttgcgg ggagcaactg ctctggagat gggaatgcca 1560

ttattgcttc agaaacagca agaaatagca tctattacgg agcagcttat gactactacc 1620

ttgcatcgaa gtgggagttt catcaattct ctcttgcaac tagaagaact tggatttcgt 1680

agtggagcac ccatgattaa aaagatagct tttattgctt ggaagagttt aatagataat 1740

tttgctttaa atccagatat actatgtagt gcaaaaagac tcaagttgtt aatgcagcct 1800

ttgagttcca tccatgtgag aacagaaact ctagcattaa caaaactaga agtctggtgg 1860

tatttactga tgagacttgg acctcatctt cctgctaatt ttgaacaggt ttgtgtgcct 1920

ctgattcaaa gtacaataag cattgattct aatgcctcac ctcagggcaa ttcgtgtcat 1980

gtagctacat ctccaggttt aaatcctatg actcctgtac acaaaggtgc ttcctccccg 2040

tacggagccc cgggaactcc ccgaatgaac ctgagttcga atttaggtgg aatggccaca 2100

atcccatcca ttcaactttt gggacttgaa atgttgcttc atttcttgtt gggtccagaa 2160

gccttgagtt ttgctaagca aaataaactt gtgctgagct tagagccatt ggaacatccg 2220

ttaatcagca gcccttcctt tttttccaaa catgcaaata cacttatcac tgctgttcat 2280

gatagctttg ttgcagttgg aaaagatgcc cccggtaaca aaaaagagaa accaggttct 2340

gaagttttga ctctcttatt aaagtctttg gaaagcatag taaagtctga agtatttcct 2400

gtatcaaaaa cgctgggaac tccagctttg ttcttaattc aattaatttt caacaatttc 2460

ttggaatgtg gtgtatcaga tgaaaggttc tttctcagtt tggaatcact tgtaggctgt 2520

gttctttctg gtccaacttc accactagct ttcagtgact cagttttaaa tgttattaat 2580

caaaatgcaa agcagttgga aaataaggag catctctgga aaatgtggag tgttatagtc 2640

accccattaa ctgaattgat taatcagacc aatgaagtaa atcaaggtga tgccttagaa 2700

cataatttta gtgccatcta tggtgcattg actttaccag taaaccacat tttttcagaa 2760

cagagatttc cagtggccac catgaagact ttgcttagaa cttggtcaga attatataga 2820

gcatttgctc gttgtgctgc tttggtggca acagcagaag agaacttgtg ctgtgaggaa 2880

ctttcttcca agataatgtc cagtttggaa gatgaaggct tttctaattt gttgttcgtg 2940

gatagaatta tttatattat tactgtaatg gttgattgca ttgacttctc accatataat 3000

attaaatatc agcccaaagt taaatcacca cagagacctt cagattggtc caaaaagaag 3060

aatgagcccc tagggaaatt gacttcttta tttaaactta ttgtgaaagt gatctattct 3120

ttccacacac tgagcttcaa ggaagcacat tctgataccc tcttcactat tggcaactca 3180

atcaccggca ttatttccag tgtacttggg catatttctt tgccttctat gatccgaaaa 3240

atatttgcaa ctttaacaag acctctggca ttattttatg aaaactcaaa gcttgatgaa 3300

gttcctaaag tatatagttg tctgaacaac aagttagaaa agctactggg agaaattatt 3360

gcttgtctgc aattcagcta caccggaact tatgatagtg aacttcttga acaactctcc 3420

ccactattat gcataatatt tctgcacaag aataaacaga ttcgaaaaca gagtgctcag 3480

ttctggaatg ccacttttgc caaagtgatg atgttggttt atcctgaaga gttaaaacca 3540

gtactaacac aagccaaaca aaaatttctg ctcctgttgc ctggtttgga aactgttgaa 3600

atgatggagg aatccagtgg accatattct gatggactga aacttgaatc ttcgtcttta 3660

aaagtaaagg gtgaaattct tttggaagag gaaaagtcta ctgactttgt gtttatacct 3720

ccagaaggaa aagatgcaaa ggaaagaata ttaactgatc atcaaaaaga agttctcaaa 3780

acaaagcggt ttgaggagca aatggacagt gacattgtca ttcctcaaga tgtcacggaa 3840

gactgtggta tggctgaaca tcttgaaaag tcctcccttt cgaataatga gtgtggttct 3900

cttgacaaaa ccagtccaga aatgtcaaac agtaataatg atgaaagaaa aaaagcttta 3960

atttcatcaa ggaaaacatc aactgaatgt gcatctagta cagaaaattc tttcgttgtc 4020

agcagtagtt cagtttctaa taccactgtt gctggaactc ccccataccc tacaagtcgg 4080

aggcaaacct ttattacttt ggagaagttt gatggttcag aaaatagacc ttttagtcca 4140

tccccccttga ataatatttc atcaactgtt acagtgaaaa ataaccagga aaccatgatt 4200

aaaacagatt ttctaccaaa agcaaagcaa agagaaggga ctttttcaaa atctgattct 4260

gaaaaaatag tgaatggaac taagagatca agccggagag ctggtaaagc tgaacaaaca 4320

gggaataaaa ggtctaagcc cttaatgaga tctgagccgg agaaaaatac tgaggaatct 4380

gttgaaggca ttgtagtctt agaaaataac ccacctggtt tgcttaatca aacagaatgt 4440

gtgtcagata atcaggttca tctttctgaa tctacaatgg agcatgacaa tacaaagctt 4500

aaagcagcaa cagtggaaaa tgctgtatta ttggaaacta atactgtaga ggagaaaaat 4560

gtagaaatta atttggaatc caaagagaat acacccccag tagtaatatc agcagatcaa 4620

atggtaaatg aggatagtca ggttcagata actccaaatc agaaaaccct tagacggtct 4680

tcaaggcgac gttcagaagt agtagagtct accactgaaa gccaagataa ggaaaatagt 4740

catcaaaaaa aggaacgacg taaggaagaa gaaaaacctc ttcagaagag tccattgcat 4800

ataaaagatg atgtgttacc taaacaaaaa ctgattgctg aacaaactct acaggagaat 4860

ttaattgaga aaggaagtaa tttacatgag aagactcttg gggaaactag tgctaatgca 4920

gaaactgaac aaaataaaaa aaaggcagac cctgagaaca ttaagtctga gggggatggt 4980

acccaggaca ttgtagataa gtcctctgag aaactagtca gaggccgaac acggtatcaa 5040

actagaagag catctcaggg tttgctttcc agcattgaaa actcagaatc tgatagttcg 5100

gaggcaaaag aagaaggttc taggaagaag agatctggaa aatggaaaaa caaaagcaat 5160

gaaagtgttg acattcaaga tcaagaagag aaagtggtga aacaggaatg tataaaagct 5220

gaaaatcagt cacatgatta taaagcaact tctgaagaag atgtaagcat aaaatctccg 5280

atttgcgaaa aacaagatga aagtaatact gtaatatgtc aggattctac agtaacttca 5340

gatttgttgc aagttcctga tgatttacca aatgtgtgtg aggaaaaaaa tgaaactagc 5400

aaatatgcag aatattcctt tacaagtcta cctgtgccag aatcaaatct aaggactaga 5460

aatgccatta agagattaca taagcgagac tcttttgata attgtagttt gggagaatcc 5520

tcaaaaatag ggatatcaga tatttcttcg ctttcagaaa aaacttttca aacacttgaa 5580

tgccaacaca agagaagtag gagggtgagg agatctaaag gttgtgattg ctgtggggaa 5640

aaatcacaac ctcaggaaaa gtcactcatt gggttaaaga atacagaaaa taatgacgta 5700

gagattagtg aaacaaaaaa ggcagatgtg caagcacctg taagcccatc agaaacttct 5760

caagctaatc catattctga aggacaattt ttagatgaac atcatagtgt gaattttcat 5820

ttgggtctca aagaggataa tgatactatt aatgattcat taattgtttc tgaaaccaaa 5880

tcaaaagaaa acactatgca agaatctctt ccttctggaa tagtaaactt tagagaggaa 5940

atttgtgata tggattctag tgaagcaatg tctcttgaaa gccaggagtc acctaatgaa 6000

aattttaaaa ctgttggccc gtgtttagga gactcgaaaa atgtttcaca ggaatctttg 6060

gagacaaaag aagaaaaacc agaagaaacc ccaaaaatgg aactgagtct agagaatgtt 6120

actgttgaag gaaatgcatg taaagtaaca gaatccaatc tagagaaagc aaaaactatg 6180

gaattgaatg taggaaatga agctagcttt catggacaag agagaaccaa aactggtatt 6240

tctgaagaag cagcaataga agaaaataaa agaaatgatg actctgaagc agacacagct 6300

aaactgaatg ccaaagaagt agcaactgag gaatttaatt cagatattag tctttctgat 6360

aatactacac ctgtaaaatt gaatgctcaa actgagattt ctgaacaaac agcagctggg 6420

gaactagatg gaggaaatga tgtatctgat ctacactcat ctgaagaaac gaataccaaa 6480

atgaaaaata atgaagaaat gatgatcggc gaggcaatgg ctgaaactgg ccatgatggt 6540

gaaacagaga atgagggcat aactaccaaa acctcaaagc ctgatgaagc tgaaacaaac 6600

atgttgactg cagaaatgga caactttgtt tgtgacacag ttgaaatgag cactgaagaa 6660

ggaatcattg acgctaataa aactgaaaca aatactgagt atagtaaatc tgaagaaaaa 6720

ttagataaca atcaaatggt aatggaaagt gatattttac aggaagatca ccatacttca 6780

cagaaagtgg aggaaccatc acagtgtctg gcatctggaa cagctatctc tgagctaata 6840

atagaagaca ataatgcatc tcctcaaaaa ctaagggaac ttgatccttc acttgtgtca 6900

gcaaatgaca gtcctagtgg catgcagaca cgctgtgtct ggtctccttt ggcttctccg 6960

tctacgagca ttttaaagag aggactaaaa agatcccaag aagatgaaat ctcatcacct 7020

gttaataagg ttcgccgtgt ctcctttgca gatccaatat accaagcagg attggcagat 7080

gacattgata gacggtgctc tattgttagg tcccattctt ccaatagttc tcccatagga 7140

aaaagtgtta aaacttctcc tactacacaa tctaagtcag ttgacctctg tgtaacagct 7200

tctgaaattt attctaagat ttcagaaatg gccaaagaat ccataccatg cccaacagaa 7260

agtgtttacc caccattggt gaactgtgtg gcaccagttg acatcatttt acctcagatt 7320

acatcaaaca tgtgggcaag aggcctggga caactcatta gagctaagaa tataaaaact 7380

attggtgatt tgagtactct tacagcatct gaaataaaaa ctcttcctat ccgttctcca 7440

aaagtgtcca atgtaaaaaa ggctctcaga atatatcatg agcagcaggt gaagactcgt 7500

ggactagaag agattccagt ttttgatatt tctgaaaaaa cagtaaatgg aatagaaaat 7560

aaatctttgt cacctgatga agaaagactt gtctcagata taattgatcc tgttgcttta 7620

gaaattccat tatccaaaaa ccttctggca cagattagtg ctcttgctct tcagctggat 7680

tcagaagatc ttcataatta ttcaggaagc caactatttg aaatgcacga gaaactaagt 7740

tcagagggaa tatttttggc cacagtgtgc caatttataa ttgtagataa agctgaattt 7800

actgggcagc aagcttatat gctgatagaa gttgatgcac 7840

<210> 16
<211> 4023
<212> DNA
<213> Homo sapiens

<400> 16
gcgtgggtca gctgatcgcg cactgagggt gcgatcccgg gctccccatt ccttcctggg 60

gcgcctcccc ggcccagggc caactgggtc ccggtgtcgg caggcctggg gtcggcgacg 120

gctgctcttt tcgttctgtc gcctgcccga tggacgagcc tcccgggaag cccctcagct 180

gtgaggagaa ggaaaagtta aaggagaaat tagcattctt gaaaagggaa tacagcaaga 240

cactagcccg ccttcagcgt gcccaaagag ctgaaaagat taagcattct attaagaaaa 300

cagtagaaga acaagattgt ttgtctcagc aggatctctc accgcagcta aaacactcag 360

aacctaaaaa taaaatatgt gtttatgaca agttacacat caaaacccat cttgatgaag 420

aaactggaga aaagacatct atcacacttg atgttgggcc tgagtccttt aaccctggag 480

atggcccagg aggattacct atacaaagaa cagatgacac ccaagaacat tttccccaca 540

gggtcagtga ccctagtggt gagcaaaagc agaagctgcc aagcagaaga aagaagcagc 600

agaagaggac atttatttca caggagagag actgtgtctt tggcactgat tcactcagat 660

tgtctgggaa aagactaaag gaacaggaag aaatcagtag caaaaatcct gctagatcac 720

cagtaactga aataagaact caccttttaa gtcttaaatc tgaacttcca gattctccag 780

aaccagttac agaaattaat gaagacagtg tattaattcc accaactgcc caaccagaaa 840

aaggtgttga tacattccta agaagaccta atttcaccag ggcgactaca gttcctttac 900

agactctatc agatagcggt agtagtcagc accttgaaca cattcctcct aaaggtagca 960

gtgaacttac tactcacgac ctaaaaaaca ttagatttac ttcacctgta agtttggagg 1020

cacaaggcaa aaaaatgact gtctctacag ataacctcct tgtaaataaa gctataagta 1080

aaagtggcca actgcccaca agttctaatt tagaggcaaa tatttcatgt tctctaaatg 1140

aactcaccta caataactta ccagcaaatg aaaaccaaaa cttaaaagaa caaaatcaaa 1200

cagagaaatc tttaaaatct cccagtgaca ctcttgatgg caggaatgaa aatcttcagg 1260

aaagtgagat tctaagtcaa cctaagagtc ttagcctgga agcaacctct cctctttctg 1320

cagaaaaaca ttcttgcaca gtgcctgaag gccttctgtt tcctgcagaa tattatgtta 1380

gaacaacacg aagcatgtcc aattgccaga ggaaagtagc cgtggaggct gtcattcaga 1440

gtcatttgga tgtcaagaaa aaagggttta aaaataaaaa taaggatgca agtaaaaatt 1500

taaacctttc caatgaggaa actgaccaaa gtgaaattag gatgtctggc acatgcacag 1560

gacaaccaag ttcaagaacc tctcagaaac ttctctcatt aactaaagtc agctctcccg 1620

ctgggcccac tgaagataat gacttgtcta ggaaggcagt tgcccaagca cctggtagaa 1680

gatacacagg aaaaagaaaa tcagcctgca ccccagcatc agatcattgt gaaccacttt 1740

tgccaacttc tagcctgtcg attgttaaca ggtccaagga agaagtcacc tcacacaaat 1800

atcagcacga aaaattattt attcaagtga aagggaagaa aagtcgtcat caaaaagagg 1860

attccctttc ttggagtaat agtgcttatt tatccttgga tgatgatgct ttcacggctc 1920

catttcatag ggatggaatg ctgagtttaa agcaactact gtcttttctc agtatcacag 1980

actttcagtt acctgatgaa gactttggac ctcttaagct tgaaaaagtg aagtcctgct 2040

cagaaaaacc agtggagccc tttgagtcaa aaatgtttgg agagagacat cttaaagagg 2100

gaagctgtat ttttccagag gaactgagtc ctaaacgcat ggatacagaa atggaggact 2160

tagaagagga ccttattgtt ctaccaggaa aatcacatcc caaaaggcca aactcgcaaa 2220

gccagcatac aaagacgggc ctttcttcat ccatattact ttatactcct ttaaatacgg 2280

ttgcgcctga tgataatgac aggcctacca cagacatgtg ttcacctgct ttccccatct 2340

taggtactac tccagccttt ggccctcaag gctcctatga aaaagcatct acagaagttg 2400

ctggacgaac ttgctgcaca ccccaacttg ctcatttgaa agactcagtc tgtcttgcca 2460

gtgatactaa acaattcgac agttcaggca gcccagcaaa accacatacc accctgcaag 2520

tgtcaggcag gcaaggacaa cctacctgtg actgtgactc tgtcccgcca ggaacacctc 2580

cacccattga gtcattcact tttaaagaaa atcagctctg tagaaacaca tgccaggagc 2640

tgcataaaca ttccgtcgaa cagactgaaa cagcagagct tcctgcttct gatagcataa 2700

acccaggcaa cctacaattg gtttcagagt taaagaatcc ttcaggttcc tgttccgtag 2760

atgtgagtgc catgttttgg gaaagagccg gttgtaaaga gccatgtatc ataactgctt 2820

gcgaagatgt agtttctctt tggaaagctc tggatgcttg gcagtgggaa aaactttata 2880

cctggcactt cgcagaggtt ccagtattac agatagttcc agtgcctgat gtgtataatc 2940

tcgtgtgtgt agctttggga aatttggaaa tcagagagat cagggcattg ttttgttcct 3000

ctgatgatga aagtgaaaag caagtactac tgaagtctgg aaatataaaa gctgtgcttg 3060

gcctgacaaa gaggaggcta gttagtagca gtgggaccct ttctgatcaa caagtagaag 3120

tcatgacgtt tgcagaagat ggaggaggca aagaaaacca atttttgatg ccccctgagg 3180

agactatact aacttttgct gaggtccaag ggatgcaaga agctctgctt ggtactacta 3240

ttatgaacaa cattgttatt tggaatttaa aaactggtca actcctgaaa aagatgcaca 3300

ttgatgattc ttaccaagct tcagtctgtc acaaagccta ttctgaaatg gggcttctct 3360

ttattgtcct gagtcatccc tgtgccaaag agagtgagtc gttgcgaagc cctgtgtttc 3420

agctcattgt gattaaccct aagacgactc tcagcgtggg tgtgatgctg tactgtcttc 3480

ctccagggca ggctggcagg ttcctggaag gtgacgtgaa agatcactgt gcagcagcaa 3540

tcttgacttc tggaacaatt gccatttggg acttacttct cggtcagtgt actgccctcc 3600

tcccacctgt ctctgaccaa cattggtctt ttgtgaaatg gtcgggtaca gactctcatt 3660

tgctggctgg acaaaaagat ggaaatatat ttgtatacca ctattcataa gttagggtaa 3720

agtgaaaaca caatttttctg gatatattgg gcctcttagt atttttgga gttttaaata 3780

taaaggagaa tatctgaatg acacttaaaa tgattgcttg tttatgtcca gacagactta 3840

ttttttattc taatgatggt agcaccactg atcttggatg tacatttatg tatactttga 3900

gaaaaagggt tttaggttga tttttgtaat ttcccacatt tgtacatgtg cttttaaagg 3960

tgtacataaa gcttcaaatg gcaataaata tttatttttа tacattcaaa aaaaaaaaaa 4020

aaa 4023

<210> 17
<211> 3911
<212> DNA
<213> Homo sapiens

<400> 17
caggtgattg actggccagc tgcctgaagg agcgccaggt cctccttgct ggcaggtggc 60

gaagcccatt ggggcggcgg tgcagaccgc ggcggcggct gcggcggtct ggctcgggag 120

gcgttcctgg ggccaaggcc atggccccgc ggctgcagct ggagaaggcg gcctggcgct 180

gggcggagac ggtgcggccc gaggaggtgt cgcaggagca catcgagacc gcttaccgca 240

tctggctgga gccctgcatt cgcggcgtgt gcagacgaaa ctgcaaagga aatccgaatt 300

gcttggttgg tattggtgag catatttggt taggagaaat agatgaaaat agttttcata 360

acatcgatga tcccaactgt gagaggagaa aaaagaactc atttgtgggc ctgactaacc 420

ttggagccac ttgttatgtc aacacatttc ttcaagtgtg gtttctcaac ttggagcttc 480

ggcaggcact ctacttatgt ccaagcactt gtagtgacta catgctggga gacggcatcc 540

aagaagaaaa agattatgag cctcaaacaa tttgtgagca tctccagtac ttgtttgcct 600

tgttgcaaaa cagtaatagg cgatacattg atccatcagg atttgttaaa gccttgggcc 660

tggacactgg acaacagcag gatgctcaag aattttcaaa gctctttatg tctctattgg 720

aagatacttt gtctaaacaa aagaatccag atgtgcgcaa tattgttcaa cagcagttct 780

gtggagaata tgcctatgta actgtttgca accagtgtgg cagagagtct aagcttttgt 840

caaaatttta tgagctggag ttaaatatcc aaggccacaa acagttaaca gattgtatct 900

cggaattttt gaaggaagaa aaattagaag gagacaatcg ctatttttgc gagaactgtc 960

aaagcaaaca gaatgcaaca agaaagattc gacttcttag ccttccttgc actctgaact 1020

tgcagctaat gcgttttgtc tttgacaggc aaactggaca taagaaaaag ctgaatacct 1080

acattggctt ctcagaaatt ttggatatgg agccttatgt ggaacataaa ggtgggtcct 1140

acgtgtatga actcagcgca gtcctcatac acagaggagt gagtgcttat tctggccact 1200

acatcgccca cgtgaaagat ccacagtctg gtgaatggta taagtttaat gatgaagaca 1260

tagaaaagat ggaggggaag aaattacaac tagggattga ggaagatcta gcagaacctt 1320

ctaagtctca gacacgtaaa cccaagtgtg gcaaaggaac tcattgctct cgaaatgcat 1380

atatgttggt ttatagactg caaactcaag aaaagcccaa cactactgtt caagttccag 1440

cctttcttca agagctggta gatcgggata attccaaatt tgaggagtgg tgtattgaaa 1500

tggctgagat gcgtaagcaa agtgtggata aaggaaaagc aaaacacgaa gaggttaagg 1560

agctgtacca aaggttacct gctggagctg agccctatga gtttgtctct ctggaatggc 1620

tgcaaaagtg gttggatgaa tcaacaccta ccaaacctat tgataatcac gcttgcctgt 1680

gttcccatga caagcttcac ccggataaaa tatcaattat gaagaggata tctgaatatg 1740

cagctgacat tttctatagt agatatggag gaggtccaag actaactgtg aaagccctgt 1800

gtaaggaatg tgtagtagaa cgttgtcgca tattgcgtct gaagaaccaa ctaaatgaag 1860

attataaaac tgttaataat ctgctgaaag cagcagtaaa gggcgatgga ttttgggtgg 1920

ggaagtcctc cttgcggagt tggcgccagc tagctcttga acagctggat gagcaagatg 1980

gtgatgcaga acaaagcaac ggaaagatga acggtagcac cttaaataaa gatgaatcaa 2040

aggaagaaag aaaagaagag gaggaattaa attttaatga agatattctg tgtccacatg 2100

gtgagttatg catatctgaa aatgaaagaa ggcttgtttc taaagaggct tggagcaaac 2160

tgcagcagta ctttccaaag gctcctgagt ttccaagtta caaagagtgc tgttcacagt 2220

gcaagatttt agaaagagaa ggggaagaaa atgaagcctt acataagatg attgcaaacg 2280

agcaaaagac ttctctccca aatttgttcc aggataaaaa cagaccgtgt ctcagtaact 2340

ggccagagga tacggatgtc ctctacatcg tgtctcagtt ctttgtagaa gagtggcgga 2400

aatttgttag aaagcctaca agatgcagcc ctgtgtcatc agttgggaac agtgctcttt 2460

tgtgtcccca cgggggcctc atgtttacat ttgcttccat gaccaaagaa gattctaaac 2520

ttatagctct catatggccc agtgagtggc aaatgataca aaagctcttt gttgtggatc 2580

atgtaattaa aatcacgaga attgaagtgg gagatgtaaa cccttcagaa acacagtata 2640

tttctgagcc caaactctgt ccagaatgca gagaaggctt attgtgtcag cagcagaggg 2700

acctgcgtga atacactcaa gccaccatct atgtccataa agttgtggat aataaaaagg 2760

tgatgaagga ttcggctccg gaactgaatg tgagtagttc tgaaacagag gaggacaagg 2820

aagaagctaa accagatgga gaaaaagatc cagattttaa tcaaatcatg catgcatttt 2880

cagttgctcc ttttgaccag aatttgtcaa ttgatggaaa gattttaagt gatgactgtg 2940

ccaccctagg caccccttggc gtcattcctg aatctgtcat tttattgaag gctgatgaac 3000

caattgcaga ttatgctgca atggatgatg tcatgcaagt ttgtatgcca gaagaagggt 3060

ttaaaggtac tggtcttctt ggacattaat ctttgaatac ttgctgactg ctaagaaatg 3120

accagagggg aagaggagtt tgacatgtta gggcattaaa gcaaaggtgg atttaagaat 3180

taaaccatta catgcccctt ccaaaaggca gaaatccatt caaacgtgac tgtcccaaat 3240

gccttatgtc aaataaagca gattgcactg atggacatca gacttgaagg aaatgtttcc 3300

aattttatat ttaaggggg tggtgggtgg gaggggcaa gtaaagacgg aacaagttta 3360

gtagcagtaa tagtaaatca tgtttacata tgagatttat agtcgtggga ggggaataaa 3420

gttctgttat atttccttgc tcgagtttca taccagatgc gttggtccat aaaggattgt 3480

atcaagtaga tgggacaaca ttctgctctg aacgaaaagt aattttagag acataacctg 3540

cttaccaatg cctgtctttg attcatattc tactttcaat aaagcatgaa agtgaagaac 3600

ttgtcctaag tgtggaaaag tgtcttcaga tttagactct tctccatgtc agctgcagcg 3660

ccacccgcct tacacctgcc cggccgtctg tctcttggta ttgggtaaag gaggggcac 3720

ctgcatgtct cctgcaatga gcaaggaatt atgtctcatg ttttgacttc agaggctttt 3780

tgctttggtg catttcagaa aggatggaga acatttatta tgtgtgaaag catcctcttc 3840

cggttttgct gttattcaaa agtgggaaat gtacctggca cgtttgaaaa taaaaaatct 3900

gactacctat c 3911

<210> 18
<211> 3682
<212> DNA
<213> Homo sapiens

<400> 18
aaaactgcga ctgcgcggcg tgagctcgct gagacttcct ggaccccgca ccaggctgtg 60

gggtttctca gataactggg cccctgcgct caggaggcct tcaccctctg ctctgggtaa 120

agttcattgg aacagaaaga aatggattta tctgctcttc gcgttgaaga agtacaaaat 180

gtcattaatg ctatgcagaa aatcttagag tgtcccatct gtctggagtt gatcaaggaa 240

cctgtctcca caaagtgtga ccacatattt tgcaaatttt gcatgctgaa acttctcaac 300

cagaagaaag ggccttcaca gtgtccttta tgtaagaatg atataaccaa aaggagccta 360

caagaaagta cgagatttag tcaacttgtt gaagagctat tgaaaatcat ttgtgctttt 420

cagcttgaca caggtttgga gtatgcaaac agctataatt ttgcaaaaaa ggaaaataac 480

tctcctgaac atctaaaaga tgaagtttct atcatccaaa gtatgggcta cagaaaccgt 540

gccaaaagac ttctacagag tgaacccgaa aatccttcct tgcaggaaac cagtctcagt 600

gtccaactct ctaaccttgg aactgtgaga actctgagga caaagcagcg gatacaacct 660

caaaagacgt ctgtctacat tgaattggga tctgattctt ctgaagatac cgttaataag 720

gcaacttatt gcagtgtggg agatcaagaa ttgttacaaa tcacccctca aggaaccagg 780

gatgaaatca gtttggattc tgcaaaaaag ggtgaagcag catctgggtg tgagagtgaa 840

acaagcgtct ctgaagactg ctcagggcta tcctctcaga gtgacatttt aaccactcag 900

cagagggata ccatgcaaca taacctgata aagctccagc aggaaatggc tgaactagaa 960

gctgtgttag aacagcatgg gagccagcct tctaacagct acccttccat cataagtgac 1020

tcttctgccc ttgaggacct gcgaaatcca gaacaaagca catcagaaaa agcagtatta 1080

acttcacaga aaagtagtga ataccctata agccagaatc cagaaggcct ttctgctgac 1140

aagtttgagg tgtctgcaga tagttctacc agtaaaaata aagaaccagg agtggaaagg 1200

tcatcccctt ctaaatgccc atcattagat gataggtggt acatgcacag ttgctctggg 1260

agtcttcaga atagaaacta cccatctcaa gaggagctca ttaaggttgt tgatgtggag 1320

gagcaacagc tggaagagtc tgggccacac gatttgacgg aaacatctta cttgccaagg 1380

caagatctag agggaacccc ttacctggaa tctggaatca gcctcttctc tgatgaccct 1440

gaatctgatc cttctgaaga cagagcccca gagtcagctc gtgttggcaa cataccatct 1500

tcaacctctg cattgaaagt tccccaattg aaagttgcag aatctgccca gagtccagct 1560

gctgctcata ctactgatac tgctgggtat aatgcaatgg aagaaagtgt gagcagggag 1620

aagccagaat tgacagcttc aacagaaagg gtcaacaaaa gaatgtccat ggtggtgtct 1680

ggcctgaccc cagaagaatt tatgctcgtg tacaagtttg ccagaaaaca ccacatcact 1740

ttaactaatc taattactga agagactact catgttgtta tgaaaacaga tgctgagttt 1800

gtgtgtgaac ggacactgaa atattttcta ggaattgcgg gaggaaaatg ggtagttagc 1860

tatttctggg tgacccagtc tattaaagaa agaaaaatgc tgaatgagca tgattttgaa 1920

gtcagaggag atgtggtcaa tggaagaaac caccaaggtc caaagcgagc aagagaatcc 1980

caggacagaa agatcttcag ggggctagaa atctgttgct atgggccctt caccaacatg 2040

cccacagatc aactggaatg gatggtacag ctgtgtggtg cttctgtggt gaaggagctt 2100

tcatcattca cccttggcac aggtgtccac ccaattgtgg ttgtgcagcc agatgcctgg 2160

acagaggaca atggcttcca tgcaattggg cagatgtgtg aggcacctgt ggtgacccga 2220

gagtgggtgt tggacagtgt agcactctac cagtgccagg agctggacac ctacctgata 2280

ccccagatcc cccacagcca ctactgactg cagccagcca caggtacaga gccacaggac 2340

ccaagaatga gcttacaaag tggcctttcc aggccctggg agctcctctc actcttcagt 2400

ccttctactg tcctggctac taaatatttt atgtacatca gcctgaaaag gacttctggc 2460

tatgcaaggg tcccttaaag attttctgct tgaagtctcc cttggaaatc tgccatgagc 2520

acaaaattat ggtaattttt cacctgagaa gattttaaaa ccatttaaac gccaccaatt 2580

gagcaagatg ctgattcatt atttatcagc cctattcttt ctattcaggc tgttgttggc 2640

ttagggctgg aagcacagag tggcttggcc tcaagagaat agctggtttc cctaagttta 2700

cttctctaaa accctgtgtt cacaaaggca gagagtcaga cccttcaatg gaaggagagt 2760

gcttgggatc gattatgtga cttaaagtca gaatagtcct tgggcagttc tcaaatgttg 2820

gagtggaaca ttggggagga aattctgagg caggtattag aaatgaaaag gaaacttgaa 2880

acctgggcat ggtggctcac gcctgtaatc ccagcacttt gggaggccaa ggtgggcaga 2940

tcactggagg tcaggagttc gaaaccagcc tggccaacat ggtgaaaccc catctctact 3000

aaaaatacag aaattagccg gtcatggtgg tggacacctg taatcccagc tactcaggtg 3060

gctaaggcag gagaatcact tcagcccggg aggtggaggt tgcagtgagc caagatcata 3120

ccacggcact ccagcctggg tgacagtgag actgtggctc aaaaaaaaaa aaaaaaaagg 3180

aaaatgaaac taggaaaggt ttcttaaagt ctgagatata tttgctagat ttctaaagaa 3240

tgtgttctaa aacagcagaa gattttcaag aaccggtttc caaagacagt cttctaattc 3300

ctcattagta ataagtaaaa tgtttattgt tgtagctctg gtatataatc cattcctctt 3360

aaaatataag acctctggca tgaatatttc atatctataa aatgacagat cccaccagga 3420

aggaagctgt tgctttcttt gaggtgattt ttttcctttg ctccctgttg ctgaaaccat 3480

acagcttcat aaataatttt gcttgctgaa ggaagaaaaa gtgtttttca taaacccatt 3540

atccaggact gtttatagct gttggaagga ctaggtcttc cctagccccc ccagtgtgca 3600

agggcagtga agacttgatt gtacaaaata cgttttgtaa atgttgtgct gttaacactg 3660

caaataaact tggtagcaaa ca 3682

<210> 19
<211> 2516
<212> DNA
<213> Homo sapiens

<400> 19
cggacgcgcg cgcccctccc cctcccccccg cgctcccaac gtgtggcggc tcgcgacccc 60

cggcaacccg gagaaggtct acagagcggc ctgcgccacg aacaaaagga tgccacggag 120

aaagaaaaaa gttaaagaag tctccgaatc tcggaacctg gagaagaagg atgtggaaac 180

taccagttct gtcagtgtga agaggaagcg tagacttgag gatgcattca ttgtgatatc 240

cgatagtgat ggagaggaac caaaggagga aaatgggttg cagaaaacga agacaaaaca 300

gtcgaataga gcaaagtgtt tggccaaaag aaaaatcgca cagatgacag aagaagaaca 360

gtttgctctg gctctcaaaa tgagtgagca ggaagctagg gaggtgaaca gccaggagga 420

ggaagaagag gagctcttga ggaaagccat tgctgaaagc ctgaatagtt gccggccttc 480

tgatgcttcc gctaccagat ctcgacctct ggccactgga ccgtcttccc agtcccatca 540

agagaaaacc acagactctg ggctcactga aggcatatgg cagctggtac ctccatcact 600

gtttaaaggc tcacatatca gtcagggaaa cgaggctgag gaaagagagg agccttggga 660

ccacactgaa aaaactgaag aggagccggt ctctggcagc tcaggaagct gggaccagtc 720

aagccagcca gtgtttgaga atgtgaacgt taaatctttt gacagatgta ctggccactc 780

ggctgagcac acacagtgtg ggaagccaca ggaaagtact gggaggggtt ctgcctttct 840

caaagctgtc cagggtagcg gggacacatc taggcactgt ctacctaccc tagcagatgc 900

caaaggtctc caggacactg ggggcactgt gaactatttc tggggtattc cattctgccc 960

tgatggagta gaccctaacc agtataccaa ggtcattctc tgccagttgg aggtttatca 1020

aaagagcctg aaaatggctc agaggcagct ccttaataaa aaaggttttg gggaaccagt 1080

gttacctaga cctccttctc tgatccagaa tgaatgtggc caaggagagc aggctagtga 1140

gaaaaatgga tgcatctcag aagatatggg agatgaagac aaagaggaga ggcaggagtc 1200

tagggcatct gactggcact caaaaaccaa ggatttccag gaaagctcaa ttaaaagctt 1260

gaaagagaaa cttttgttgg aggaagaacc aacaaccagt catggtcagt cttcccaagg 1320

gattgttgaa gaaacttctg aagagggaaa ctctgtacct gcttcacaaa gtgttgctgc 1380

tttgaccagt aagagaagct tagtccttat gccagagagt tctgcagaag aaatcactgt 1440

ttgtcctgag acccagctaa gttcctctga aacttttgac cttgaaagag aagtctctcc 1500

aggtagcaga gatatcttgg atggagtcag aataataatg gcagataagg aggttggtaa 1560

caaggaagat gctgagaagg aagtagctat ttctaccttc tcatccagta accaggtatc 1620

ctgcccgcta tgtgaccaat gctttccacc tacaaagatt ggacgacatg ccatgtactg 1680

caatggtctg atggaggaag atacagtatt gactcggaga caaaaagagg ccaagaccaa 1740

gagtgacagt gggacagctg cccagacttc tctagacatt gacaagaatg agaagtgtta 1800

cctctgtaaa tccctggtcc catttagaga gtatcagtgt catgtggact cctgtctcca 1860

gcttgcaaag gctgaccaag gagatggacc tgaagggagt ggaagagcat gttcaactgt 1920

ggaggggaag tggcagcaga ggctgaagaa cccaaaggaa aaaggccaca gtgaaggccg 1980

actccttagt ttcttggaac agtctgagca caagacttca gatgcagaca tcaagtcttc 2040

agaaacagga gccttcaggg tgccttcacc agggatggaa gaggcaggct gcagcagaga 2100

gatgcagagt tctttcacac gtcgtgactt aaatgaatct cccgtcaagt cttttgtttc 2160

catttcagaa gccacagatt gcttagtgga ctttaaaaag caagttactg tccagccagg 2220

tagtcggaca cggaccaaag ctggcagagg aagaaggaga aaattctgaa tttctagggt 2280

ccaaaagttg acaaaaccat tagtaggagg ggtgggccat gttctataag ccatagtggt 2340

ccctagttca ttgttgagca agtttttagc cctgcagttt tcaccaccag caccaccagc 2400

acctacccag cattctggtt tttatgtttt ttatgatcta tgcagacaac tgtgtattct 2460

gttttataac agtttgtttg aatttactta cagttaaaaa atttaaatat aaaaaa 2516

<210> 20
<211> 1865
<212> DNA
<213> Homo sapiens

<400> 20
gagtgcgcac gcatcctgcc cgcggcgcgc gcgcaggtcg gtgcgtctgt cgggggcgcg 60

ctcgggtacc tgtaccccac gtagtcgccg gttaccgatc ggactaagtt ccagtggtga 120

tttacaagtc aagttaaaat gtccccagaa gtggccttga accgaatatc tccaatgctc 180

tccctttca tatctagcgt ggtccggaat ggaaaagtgg gactggatgc tacaaactgt 240

ttgaggataa ctgacttaaa atctggctgc acatcattga ctcctgggcc caactgtgac 300

cgatttaaac tgcacatacc atatgctgga gagacattaa agtgggatat cattttcaat 360

gcccaatacc cagaactgcc tcccgatttt atctttggag aagatgctga attcctgcca 420

gacccctcag ctttgcagaa tcttgcctcc tggaatcctt caaatcctga atgtctctta 480

cttgtggtga aggaacttgt gcaacaatat caccaattcc aatgtagccg cctccgggag 540

agctcccgcc tcatgtttga ataccagaca ttactggagg agccacagta tggagagaac 600

atggaaattt atgctgggaa aaaaaacaac tggactggtg aattttcagc tcgtttcctt 660

ttgaagctgc ccgtagattt cagcaatatc cccacatacc ttctcaagga tgtaaatgaa 720

gaccctggag aagatgtggc cctcctctct gttagttttg aggacactga agccacccag 780

gtgtacccca agctgtactt gtcacctcga attgagcatg cacttggagg ctcctcagct 840

cttcatatcc cagcttttcc aggaggagga tgtctcattg attacgttcc tcaagtatgc 900

cacctgctca ccaacaaggt gcagtacgtg attcaagggt atcacaaaag aagagagtat 960

attgctgctt ttctcagtca ctttggcaca ggtgtcgtgg aatatgatgc agaaggcttt 1020

acaaaactca ctctgctgct gatgtggaaa gatttttgtt ttcttgtaca cattgacctg 1080

cctctgtttt tccctcgaga ccagccaact ctcacatttc agtccgttta tcactttacc 1140

aacagtggac agctttactc ccaggcccaa aaaaattatc cgtacagccc cagatgggat 1200

ggaaatgaaa tggccaaaag agcaaaggga tgccagggga gcagagatgc ctgcagcccg 1260

tgggagcaag tcctggcctt tgcagttgca aaaactggct gcaagctgct ccagccccag 1320

aggaactggc caagctccag agggcctcct tggagggcct cagagggaga gagaactgct 1380

cagtaatttt gatcactttg ggcttatttc aaaacctttg tccctcagtt ccaggaggca 1440

gcatttgcca atggaaagct ctaggaaaca ccagtcttga gaggtggcca gccagactgc 1500

ctgtccacat gcgtgtcagc acatacagcc gcttcctgga agccgcctgg aatgtcttca 1560

cggcagcgtt ttgctcacac agcagctttt gcacgcccca ggcagccccg actgctgaaa 1620

tccaacttga gctggctggt ggtccctgga tcctagagcc cttcacttcg ggttactccc 1680

tctttcttgc ctctatttct tagttggaag aaataaactc acaaattatg gtgcagtaat 1740

tttccgggga aagtaaagcc tcaggaatgc ccacgccttt cttccaaagc ctttgtctct 1800

gagacctctt aagttctaag attaaatgcc cctcgctgtt tctcctctga aaaaaaaaaa 1860

aaaaa 1865

<210> 21
<211> 2407
<212> DNA
<213> Homo sapiens

<400> 21
gccaagatgg cggtgcaggt ggtgcaggcg gtgcaggcgg ttcatctcga gtctgacgct 60

ttcctcgttt gtctcaacca cgctctgagc acagagaagg aggaagtaat ggggctgtgc 120

ataggggagt tgaacgatga tacaaggagt gactccaaat ttgcatatac tggaactgaa 180

atgcgcacag ttgctgaaaa ggttgatgcc gtcagaattg ttcacattca ttctgtcatc 240

atcttacgac gttctgataa gaggaaggac cgagtagaaa tttctccaga gcagctgtct 300

gcagcttcaa cagaggcaga gaggttggct gaactgacag gccgccccat gagagttgtg 360

ggctggtatc attcccatcc tcatataact gtttggcctt cacatgttga tgttcgcaca 420

caagccatgt accagatgat ggatcaaggc tttgtaggac ttatttttc ctgtttcata 480

gaagataaga acacaaagac tggccgggta ctctacactt gcttccaatc catacaggcc 540

caaaagagtt cagagtatga gagaatcgaa atcccaatcc atattgtacc tcatgtcact 600

atcgggaaag tgtgccttga atcagcagta gagctgccca agatcctgtg ccaggaggag 660

caggatgcgt ataggaggat ccacagcctt acacatctgg actcagtaac caagatccat 720

aatggctcag tgtttaccaa gaatctgtgc agtcagatgt cggcagtcag cgggcctctc 780

ctacagtggt tggaggacag actggagcaa aaccaacagc atttgcagga attacaacaa 840

gaaaaggaag agcttatgca agaactttct tctctagaat aaatcaggag acaaaatggg 900

gaaagatgaa aatatccagt gtaaagttac ttaagctaaa tcaatttcaa agaagaaaaa 960

cttggaggac tcattttacc tgacttcaag acttactata aagctatagt aatcaagata 1020

gatggtattg gcagaggaac agacacatac gtcaatggaa cagatgagag aacccagaaa 1080

taaacccata taaatatgct cagctgattt tgaaaaagtg aaaaagcaat tcaatggagg 1140

aagaatagcc tttctgacaa attatgctag agcaattaga cacccatggc gaggagaaaa 1200

aagaacctct acttaaacct cacatcttat ataaaattta actcaaaatg tataacggac 1260

ttaaatgtga tacataaaac tagataactt tgaaaaaagc cacaggagaa aaatcttcag 1320

gatcttgggc taggtgacaa gttcttggac tttgccccga aagcacatcc ataaaagaca 1380

aaatctgata tattggactt cttcaaaatt taaaaacttg tgatttaaga agaggaaaag 1440

ataagctaca gattgagatg aatttgcaaa ccatatatct gatcaatttg gaatatataa 1500

agtgtactaa aaactcaact gaagtcaggc atggtagctc atgcttgtaa tctcaccact 1560

ttgggaggcc aagatgggag gagtgcttga ggttaggcgt tccagaccag cctgggcaac 1620

atagtgagac tcttgtctct acaaaaagtt tttttaaaaa attaactggg caccatgaca 1680

cacaccagta gtcccagcta ctagggaggc aggaggatca cttgagccca ggagtttgag 1740

gcctgcggtg agctgtgatc acaccaccac actccaacct gtgtaacaga gtgaggcctc 1800

atctcaaaaa aaaaaaaaag gccacaaaac tcaacaataa aaacaaacag tccaattaga 1860

aaatgggcaa aagacatgaa tagatgtttc actgaagagg atctatagat ggcaagtaag 1920

catatgaaaa gctgttaaac tccataagtc atcagggaat gcaaattgaa accacagcga 1980

ggctatgact tacttatctc aatggctaaa gaaaaaatag tgaaaatacc aaatactgat 2040

gaggatacaa actggatatt ttatacattg ctgacaggaa tgtaaaatgg tacagccact 2100

ctgggaaaga gtttatgaat ttcttatcaa gttaaacata atttttttaat caagttaaac 2160

ataagaccca gcagttgtgc tcctggacat tcattccaga gaaatgaaaa cctatattgt 2220

acttgtactc aaatattcat aggagcttta tttgtaatag ccccaaactg gaaacaaccc 2280

agatgtccta caacaggtac atggttaaac aaaccatcca taacttggaa tactgctctg 2340

gaatgaaaag gaactaactg ttgatacaag aacttggttg tacctcaggg gtattatggt 2400

gaacaaa 2407

<210> 22
<211> 2530
<212> DNA
<213> Homo sapiens

<400> 22
cagcttccct gtggtttccc gaggcttcct tgcttcccgc tctgcgagga gcctttcatc 60

cgaaggcggg acgatgccgg ataatcggca gccgaggaac cggcagccga ggatccgctc 120

cgggaacgag cctcgttccg cgcccgccat ggaaccggat ggtcgcggtg cctgggccca 180

cagtcgcgcc gcgctcgacc gcctggagaa gctgctgcgc tgctcgcgtt gtactaacat 240

tctgagagag cctgtgtgtt taggaggatg tgagcacatc ttctgtagta attgtgtaag 300

tgactgcatt ggaactggat gtccagtgtg ttacaccccg gcctggatac aagacttgaa 360

gataaataga caactggaca gcatgattca actttgtagt aagcttcgaa atttgctaca 420

tgacaatgag ctgtcagatt tgaaagaaga taaacctagg aaaagtttgt ttaatgatgc 480

aggaaacaag aagaattcaa ttaaaatgtg gtttagccct cgaagtaaga aagtcagata 540

tgttgtgagt aaagcttcag tgcaaaccca gcctgcaata aaaaaagatg caagtgctca 600

gcaagactca tatgaatttg tttccccaag tcctcctgca gatgtttctg agagggctaa 660

aaaggcttct gcaagatctg gaaaaaagca aaaaaagaaa actttagctg aaatcaacca 720

aaaatggaat ttagaggcag aaaaagaaga tggtgaattt gactccaaag aggaatctaa 780

gcaaaagctg gtatccttct gtagccaacc atctgttatc tccagtcctc agataaatgg 840

tgaaatagac ttactagcaa gtggctcctt gacagaatct gaatgttttg gaagtttaac 900

tgaagtctct ttaccattgg ctgagcaaat agagtctcca gacactaaga gcaggaatga 960

agtagtgact cctgagaagg tctgcaaaaa ttatcttaca tctaagaaat ctttgccatt 1020

agaaaataat ggaaaacgtg gccatcacaa tagactttcc agtcccattt ctaagagatg 1080

tagaaccagc attctgagca ccagtggaga ttttgttaag caaaccgtgc cctcagaaaa 1140

tataccattg cctgaatgtt cttcaccacc ttcatgcaaa cgtaaagttg gtggtacatc 1200

agggaggaaa aacagtaaca tgtccgatga attcattagt ctttcaccag gtacaccacc 1260

ttctacatta agtagttcaa gttacaggca agtgatgtct agtccctcag caatgaagct 1320

gttgcccaat atggctgtga aaagaaatca tagaggagag actttgctcc atattgcttc 1380

tattaagggc gacatacctt ctgttgaata ccttttacaa aatggaagtg atccaaatgt 1440

taaagaccat gctggatgga caccattgca tgaagcttgc aatcatgggc acctgaaggt 1500

agtggaatta ttgctccagc ataaggcatt ggtgaacacc accgggtatc aaaatgactc 1560

accacttcac gatgcagcca agaatgggca cgtggatata gtcaagctgt tactttccta 1620

tggagcctcc agaaatgctg ttaatatatt tggtctgcgg cctgtcgatt atacagatga 1680

tgaaagtatg aaatcgctat tgctgctacc agagaagaat gaatcatcct cagctagcca 1740

ctgctcagta atgaacactg ggcagcgtag ggatggacct cttgtactta taggcagtgg 1800

gctgtcttca gaacaacaga aaatgctcag tgagcttgca gtaattctta aggctaaaaa 1860

atatactgag tttgacagta cagtaactca tgttgttgtt cctggtgatg cagttcaaag 1920

taccttgaag tgtatgcttg ggattctcaa tggatgctgg attctaaaat ttgaatgggt 1980

aaaagcatgt ctacgaagaa aagtatgtga acaggaagaa aagtatgaaa ttcctgaagg 2040

tccacgcaga agcaggctca acagagaaca gctgttgcca aagctgtttg atggatgcta 2100

cttctatttg tggggaacct tcaaacacca tccaaaggac aaccttatta agctcgtcac 2160

tgcaggtggg ggccagatcc tcagtagaaa gcccaagcca gacagtgacg tgactcagac 2220

catcaataca gtcgcatacc atgcgagacc cgattctgat cagcgcttct gcacacagta 2280

tatcatctat gaagatttgt gtaattatca cccagagagg gttcggcagg gcaaagtctg 2340

gaaggctcct tcgagctggt ttatagactg tgtgatgtcc tttgagttgc ttcctcttga 2400

cagctgaata ttataccaga tgaacatttc aaattgaatt tgcacggttt gtgagagccc 2460

agtcattgta ctgtttttaa tgttcacatt tttacaaata ggtagagtca ttcatatttg 2520

tctttgaatc 2530

<210> 23
<211> 21
<212> RNA
<213> Artificial Sequence

<220>
<223> siRNA oligonucleotide

<400> 23
aacuuaggug aagcagcauc u 21

<210> 24
<211> 21
<212> RNA
<213> Artificial Sequence

<220>
<223> siRNA oligonucleotide

<400> 24
aagaggaagg accgaguaga a 21

<210> 25
<211> 21
<212> RNA
<213> Artificial Sequence

<220>
<223> siRNA oligonucleotide

<400> 25
aaggugcagu acgugauuca a 21

<210> 26
<211> 21
<212> RNA
<213> Artificial Sequence

<220>
<223> siRNA oligonucleotide

<400> 26
aaguuacuca gccaagaacg a 21